

IMF Working Paper

© 1999 International Monetary Fund

This is a *Working Paper* and the author(s) would welcome any comments on the present text. Citations should refer to a *Working Paper of the International Monetary Fund*. The views expressed are those of the author(s) and do not necessarily represent those of the Fund.

WP/99/177

INTERNATIONAL MONETARY FUND

European I Department

Redistribution Through Public Employment: The Case of Italy

Prepared by Alberto Alesina, Stephan Danninger, and Massimo Rostagno¹

Authorized for distribution by Thomas Krueger

December 1999

Abstract

This paper examines the regional distribution of public employment in Italy and documents two sets of facts. The first is the use of public employment as a subsidy from the North to the less wealthy South. We calculate that about half of the wage bill in the South of Italy can be identified as a subsidy, with both the size of public employment and wage levels used as a redistributive device. The second set of facts concerns the negative effects of subsidized public employment on individuals' attitudes toward job search, education, and "risk-taking" activities. We conclude that heavy reliance on public employment distorts incentives and discourages the development of market activities in the South.

JEL Classification Numbers: H3, J4

Keywords: Public Employment, Redistribution of Income, Public Policy and Economic Behavior of Agents

Corresponding Author's E-mail Address: smd39@columbia.edu

¹ We thank Silvia Ardagna, Jörg Decressin, Daniele Franco, Larry Katz, Thomas Krueger, and Sandro Momigliano for useful suggestions. Mr. Alesina's research is supported by a National Science Foundation grant to the National Bureau of Economic Research. He is grateful to both organizations for their support. Mr. Danninger was an intern at the International Monetary Fund and Mr. Rostagno was a staff member when the project was initiated.

Contents	Page
I. Introduction	4
II. Public Employment as a Redistributive Device	5
III. The Distribution of Public Employment in Italy.....	7
A. The Data	7
B. Imbalance in the Distribution of Public Jobs.....	8
C. Productivity of Public Jobs.....	10
D. Quality of Public Services in the North and in the South	11
IV. Socio-Economic Consequences of Public Employment	12
A. Wage Differentials	12
B. Family Persistence of Public Sector Jobs.....	14
C. Education and Career Choices	15
D. Job Search	15
E. Entrepreneurship	17
V. The Size of Regional Redistribution Through Public Employment	18
A. The Quantity Effect	19
One-dimensional baseline estimates	19
Multi dimensional estimates: Wagner regressions	20
B. The Price Effect	22
Price effect 1: Cost of living adjustment.....	22
Price effect 2: Adjustment to public-private pay structure	22
C. The Total Cost of Excessive Public Employment	23
VI. Conclusion	24
Tables	
1. Variable Definitions	25
2. Descriptive Statistics of BIW 1995	26
3. Regional Economic Performance and Public Employment	27
4. Recent use of Public services. Yes=1, No=0	28
5. Quality of Public Services. Subjective Evaluation: 1=Worst, 10=Best	29
6. Wage Regressions for the Private and Public Sector	30
7. Pooled Wage Regression: Private and Public Sector.....	31
8. Family ties in the public sector: Frequency of Public Employment with Family.....	32
8b. Dependent Variable: Unemployed 2/ 1=yes 0=no	33
9. Employees (percent) with a Business-Oriented Degree 1/ by family ties 2/	34
10. Job Search Activity in Private and Public Sector (Logit).....	35
11. Model of Entrepreneurial Activity (Logit)	36
12. One-Dimensional Baseline Rules and Excess Public Employment.....	37

13. Wagner Regression of Public Employment for Northern Provinces	38
14. Predicted Percentage of Excessive Public Employment in Southern Provinces	39
15. Dependent Variable: log hourly earnings from full time employment	40

Figures

1. Distribution of Hours Worked per Sector and Region	41
2. Feasible Range of Cost of Excessive Public Employment.....	42

References	43
------------------	----

I. INTRODUCTION

Public employment is often used for reasons which have little to do with providing efficiently public goods and services. Many governments use public employment for other purposes, including redistribution across income groups or regions, as a way of reducing unemployment, or for patronage. While these practices are widespread, Italy is a particularly good example of a country where public employment has been used to achieve a multitude of goals. In particular, the distribution of public jobs has been one of the main channels through which public resources have been directed from the richer North toward the less wealthy South. For this reason Italy is an especially interesting case.

This paper makes three points: First, it documents the amount of geographical imbalance in the allocation of public jobs. Second, using survey evidence collected by the Bank of Italy it highlights various cultural and social consequences of an extensive reliance on public employment as a source of jobs and income. Third, we evaluate the amount of redistributive flows achieved with public employment.

Our results are striking. We conclude that *about half* of the public wage bill in the South of Italy can be defined as a subsidy. This effect is due to a combination of the size of public employment and of the wage premium for public employees relative to alternative occupations. We also show that the reliance on public jobs as a redistributive channel implies sizeable sociological effects, which can be labeled as a “culture of dependency”. Since public jobs in the South are much more attractive and available than private sector jobs, educational and attitudinal choices are tilted toward the public sector. Also, individuals do not want to exit the public sector unless they are not forced to, and this creates path dependence and rigidities.

In a nutshell, the argument that we suggest and document below is the following. Two “regions” (North and South of Italy) are bound by a unitary fiscal system, which implies that public wages are almost identical in nominal terms between North and South. Opportunities in the private sector are better in the North, so public employment is much more attractive in the South, relative to alternative opportunities. As a result, residents in the South demand more public employment in order to take advantage of a large income premium and a greater job security. Over time the South is caught in equilibrium of dependency in which public jobs are a critical source of disposable income and in which private opportunities do not materialize.² This creates a culture that discourages private activities and entrepreneurship, and that becomes self-fulfilling: the less individuals are prepared to “face the market”, the more they prefer public jobs. Furthermore, it generates a powerful constituency of public employees and their unions who are typically opposed to market oriented policies and more flexibility in the labor market. In summary, the North

² See Raffa and Zollo (1993) for a discussion of the difficulties of small private innovative business ventures in the South.

redistributes to the South in a way that creates negative cultural and social side effects. But, if this is the case, why is this redistributive system chosen? The answer may be that redistribution through public employment is less visible than direct transfers, therefore it is politically less costly and it is more effective at creating patronage and political benefits for local politicians. In addition, the inefficiency of the Italian welfare system regarding unemployment protection creates additional incentives to use public jobs (and disability pensions) as a form of permanent unemployment subsidy.

This is not the first paper that argues that public employment is used as a redistributive device. To begin with, there is an immense literature on public sector employment, most of which is focused on the United States. We cannot even try to review all this literature, so we refer the reader to the two excellent surveys by Ehrenberg and Schwarz (1986), and Gregory and Borland (1999). For our purposes, it is noteworthy that the latter, who focus not only on the United States but on the evidence available for other OECD countries as well, conclude, “public sector employees generally have higher average earnings than private sector employees”. Furthermore, they write “in most countries, some part of this difference is also attributable to higher rates of pay or rents for public sector employees.” Particularly interesting for our purposes are the results by Borjas (1986) who examines wage variations in U.S. state public employment and attributes three fourth of the interstate variation to political variables reflecting the demand of different constituencies. Also, Katz and Krueger (1991) find that in the United States while local and state governments are responsive to local economic conditions, the market for federal employees is set outside the regional context.

This paper is organized as follows. Section II discusses various theoretical arguments, which can explain why public employment may be used for reasons that go beyond the provision of public goods. Section III presents our data and illustrates regional disparities in the distribution of employment. Section IV discusses the effects of public employment on a variety of socio-economic behaviors. Section V quantifies the redistributive flows through public jobs. The last section concludes.

II. PUBLIC EMPLOYMENT AS A REDISTRIBUTIVE DEVICE

Consider a politician who has to choose between a tax on Region 1 to be used to redistribute in favor of Region 2, and an inefficient public project which taxes Region 1 and employs individuals of Region 2. By “inefficient” we mean a project for which total costs are inferior to its total benefits. The question is: would the policymaker choose the second scheme even when the first is less costly from a social point of view?

A model by Coate and Morris (1995), slightly modified by Alesina, Baqir and Easterly (1997), answers “yes” to this question. The argument is that the indirect redistributive scheme may hide the real amount of the resources redistributed, so that the second scheme may win support in region 1 while the first is blocked. The idea is simple: suppose that a proposal that introduces a tax in Region 1 (North) to finance a direct subsidy to Region 2 (South) would not pass, because it is opposed by voters in the North. Suppose

that, instead, the government wants to redistribute toward the South, and assume that, say, several new forest rangers are hired and disproportionately placed in the South. This second redistributive policy is less transparent (although perhaps less efficient) and may win approval even in the North, because of the uncertainty about the real needs of the national parks.

Public employment may also be used as a device to correct labor market imperfections. When labor markets do not produce full employment, say because of tax distortions and rigidities, it is politically rewarding to offer public sector jobs. This is particularly the case when the welfare system (like in Italy) is distorted and ineffective at protecting the temporarily unemployed. In fact, Rostagno and Utili (1997) describe the shortcomings of the Italian system of social protection, and conclude that the Italian “welfare state” is very skewed in favor of retirees, and does not protect in a coherent fashion the temporarily unemployed. Obviously, while a temporary unemployment subsidy may create incentives for job search, a permanent employment in the public sector does not, since public jobs in Italy are virtually for life and can hardly be lost.³

A third argument is that public bureaucracies, once established, become a major political force that opposes efficiency enhancing reforms. In many countries, and certainly in Italy, public sector unions are particularly strong and capable of protecting job security, if not the level of real wages.⁴ This protection generates hysteresis: once public employment increases, it takes a long time to be reduced.

Work in progress by Danninger and Rostagno (1999) incorporates many of the above elements in a unified framework. They study causes and consequences of a public dependency culture in an economy with different regional private sector productivity. The premise of that paper is that the federal government is forced to pursue a uniform public sector wage policy. As a consequence, government jobs are more attractive in the less productive region. Therefore, the less developed region at the same time faces very rewarding public sector jobs and relatively poor opportunities in the private market. This situation leads to a heavy reliance on public jobs as support for the economy of the South, which leads to a culture of “dependency”, namely the belief that the government has to provide income and insurance. The propagation of the dependency culture results from behavioral responses of residents in the less productive region. Faced with bleak private sector opportunities, they invest some of their resources in strategies that improve their employment opportunities in the public sector. As a consequence, the kind of skills that

³ A related problem concerns the use of disability pensions in Italy. These pensions have been largely used especially in the South as permanent unemployment subsidy, with the obvious distortionary effects on incentives.

⁴ For a review of the literature on public unions see Gregory and Borland (1998) and Freeman and Ichniowski (1988).

would be useful in private sector employment is not acquired. Also, the local concentration and geographical proximity of public sector jobs is important. The more an individual interacts in social networks with others who are also “specialized” in searching and maintaining public sector jobs, the more the culture becomes homogenous in this direction.⁵ This “culture of dependency” lowers expectations about future employment possibilities in the private sector and the skills to obtain them. As a result, demand for public employment expands, while private sector activities contract. The less productive region enters a vicious circle of declining private sector opportunities and a growing demand for income redistribution via public employment.

Finally, political patronage is widespread in the South and the allocation of public jobs is a well-known mechanism of vote buying.

III. THE DISTRIBUTION OF PUBLIC EMPLOYMENT IN ITALY

A. The Data

As a source for macro-data on regional differences, we draw on various Italian government statistics. Data on regional production, population, and employment are taken from publications of ISTAT, Italy’s national statistical institute (ISTAT 1996a, ISTAT 1996b). Figures on the regional distribution of public employment are taken from *Il Conto Annuale*, an annual publication of the Italian Treasury (1995). Finally our data for postal and railroad employees have been kindly provided by the Italian Treasury.

The main data source for our empirical microanalysis (section four) is the Bank of Italy survey on *Household Income and Wealth* (BIW). The BIW is a bi-annual household survey, which covers all regions in Italy and contains a broad range of information on individual characteristics and economic performance. We use data from two recent surveys in 1993 and 1995 that contain detailed information on socio-economic factors relevant to our study. Our micro analysis in section IV exclusively utilizes information from the more recent 1995 survey while in section V we combine both surveys in order to increase our sample size.

The 1995 (1993) BIW survey provides information on 23,924 (24,013) individuals covering a total of 8,135 (8,089) households. A special feature of this survey is that it contains information on parents and children of the head of the household. This allows us to track intergenerational links (family ties) and relate it to public sector employment. In most of our analysis we restrict the sample to respondents between age 15 and 62 for men and 57 for women, the traditional standard age of retirement.⁶ Note that the BIW survey over

⁵ See Bertrand, Luttmer and Mullainathan (1998) for a recent empirical analysis of the role of social networks in the propagation of a culture of “welfare” in U.S. communities.

⁶ Recent pension reforms have changed these age limits.

samples government employees by a factor of two. While over sampling has no impact on the estimation methods, it does affect the interpretation of some of our results and we indicate so where necessary.

Table 1 lists all the variables used in this paper and their sources. Table 2 provides sample statistics for some of the variables used in our empirical analysis of the BIW survey 1995.

B. Imbalance in the Distribution of Public Jobs

As Table 3 shows, Italy has a pronounced mismatch between regional economic output and the use of its public resources. About 55 percent of total output is produced in the North,⁷ while only 44 percent of the total population resides there. Also, the South of Italy has a considerably smaller number of labor force participants (51.5 percent compared to 62.5 percent in the North). The unemployment rate in the South (21.0 percent) is more than double the unemployment rate in the Centre (10.3 percent) and about three times higher than in the North (6.7 percent).⁸

The regional differences in the distribution of public jobs are large. Public civilian employment per capita is higher in the South than in the North (about 59 public employees per thousand population in the South versus 49 in the North). As a share of total employment the difference is even more staggering: 12 per cent of the employed in the North are in the public sector against 21 percent in the South. The comparison with the Centre is clouded by the presence of the national capital in the Lazio region. Including this region public employment is artificially high in the Centre, excluding the figures seem low. For this reason we focus mostly on North–South comparisons.

Table 3 underestimates the differences between North and South for two reasons. First, it does not include employees of public and semipublic enterprises. Second, Wagner Law implies that the size of government (thus of the public employees) increases with income per capita. Since the South is poorer than the North, Wagner law predicts a smaller government sector in this region. However, Wagner law ignores the use of government size

⁷ Regions are composed as follows: North: Piedmont, Valle d’Aosta, Lombardy, Trentino, Alto Adige-South Tyrol, Veneto, Friuli-Venezia Giulia, Liguria, Emilia-Romagna. Centre: Tuscany, Umbria, Marche, Lazio. South: Abruzzo, Molise, Campania, Puglia, Basilicata, Calabria, Sicily, and Sardinia.

⁸ Regional differences are so large that it seems surprising that there is no significant labor mobility from South to North. Cannari, Nucci, Sestito (1998) show that mobility costs (i.e., housing cost of relocation) are very large and make geographical relocation too costly despite large differences in income.

as an interregional redistributive device. This is precisely the point we address in Section V below.

On the other hand, differences in the age structure of the population in the North and the South may account for different levels of employment in two large sectors: education and health. In fact, the fraction of the population below 14 is higher in the South than in the North (12.4 percent in the North versus 18.8 percent in the South). However, even when we leave out these two sectors (together or one at a time) the difference between North and South remains large, roughly the same order of magnitude of Table 3.⁹

Looking at education, it is interesting to note that “class sizes” are similar across the three sections of Italy, as shown in Table 3. In secondary schools, class sizes are virtually identical. In primary school they are only slightly higher in the South. This observation implies an additional source of implicit redistribution. Since the South is substantially poorer than the North, one would expect to observe larger “class sizes” in the South if education is a normal good. One may argue that redistribution through education is efficient because of positive externalities arising from education and its positive effect on growth of the South. In order to evaluate this claim one would need a measure of the quality of education provided and compare its effect on the growth of the South relative to the North. Our evidence, discussed below, on the career choices in the North and in the South raises some doubts about the effect of education in the South as an engine of growth.

We have also examined the data on various categories of public employment, in order to investigate whether the North-South difference is prevalent in certain categories rather than others. We did not find any particular pattern; in every category of public employment the share of the South was higher than the share of the North if scaled by population or labor force.¹⁰ This is interesting, because it underlines that the high public employment in the South is not due to a special need in some specific sector, say police because of high crime rates.

Looking at public employment region by region we find that, in addition to the North South differences, some regions have higher public employment than others do. In particular Valle d’ Aosta looks like an outlier relative to other regions of the North. Valle d’ Aosta, a small mountainous region in the Northwest, is one of the five regions with a “special status” and it is bilingual (Italian and French). Also, within the North, two regions, Liguria and

⁹ Obviously the size of the difference as a percentage of the total are similar, but the total employment figures are lower, since we exclude two large sectors.

¹⁰ Results and data on this point are available upon request. Different categories were employees in ministry, education, police, regional and local entities, and provincial administrative service.

Emilia Romagna, which have been administered by the left have higher than average public employment rates.

C. Productivity of Public Jobs

It is obviously difficult to measure the productivity of public employees. However fragments of evidence suggest that the productivity of public employees in the South is much lower than in the North.

At first glance, the indices of concentration of Italy's police per macro-area that are reported on Table 3 are rather inconclusive. The higher density of officers charged with law enforcement in the Southern regions—with generally poorer records in terms of safety maintenance—reflects the government's objective to *prevent* criminal acts. However, aggregate ratios conceal striking disparities among single regions that are nevertheless not easy to justify. Some small and relatively crime free regions in the South, Abruzzo and Molise, have almost three times as many policemen per number of misdemeanors and felonies reported to the judiciaries as bordering (crime-ridden) regions Campania and Puglia, and almost five times those operating in wealthy Lombardia.¹¹

Tax administration presents a striking picture. In 1996 about 25,000 tax inspectors in the North administered Lit 213 trillion in taxes accruing to the Central Administration. While the number of staff devoted to the same tasks in the South was not significantly lower, taxes collected there amounted to a mere Lit 34 trillion. Hence the average productivity of the staff employed in tax administration in the northern regions was six times higher than that in the South. Some of this striking difference can be explained by the fact that income per capita in the North is higher than in the South, so tax collected per number of taxpayers is higher. However, every indicator of tax evasion suggests that tax compliance is lower in the South, despite the large number of tax collectors.

Similarly, the regional concentration of personnel within the national Post Office and the Railways cannot easily be attributed to differences in the demand for postal services and transportation.¹² In the former sector, a northern worker "produces" in a year ten times the annual output of her representative Southern colleague. In the transportation sector, the

¹¹ Abruzzo and Molise, with less than 4 and less than 3 reported criminal acts per 100 residents between 14 and 65 years of age, respectively, are among the regions with the best records. On the other hand, Campania and Puglia, with an incidence of slightly less than 6, and Lombardy at 6.5, are among the regions with the highest incidence of reported criminal acts over prime-age population.

¹² We measure production of postal services in terms of the number of letters and parcels sent locally. If we were to include the number of withdrawals from and payments into Postal checking and saving accounts, the productivity differentials would be even larger.

productivity gap—measured in manpower per units of goods shipped—while less extreme, is still large. We use goods rather than passengers, because it is difficult to evaluate the role of transit passengers, travelling from a region to another through many other ones.¹³

D. Quality of Public Services in the North and in the South

Before proceeding we need to evaluate whether the higher incidence of public employees in the South reflects higher utilization of public services and/or a greater quality of services provided. Concerning the first question, in the 1993 survey of the BIW,¹⁴ the heads of households were asked to report the use of local public services and to provide a qualitative evaluation of the services available. Table 4 compares the amount of public services used across regions.

The residents in the North indicate a higher use of the public transportation and the health services. The Southerners, on the other hand, use more education and childcare facilities, which is consistent with the different age distribution in the North and in the South of Italy.

However, when we compare the quality of the provided services, the picture becomes one-sided. Table 5 reports the results from individual evaluations of different types of public services. In all the public functions (transportation, health services, education, and municipal services) the residents in the North are more satisfied with the quality of local services than the residents in the South.

This result should not be surprising. Putnam (1993) reaches a similar conclusion looking at several different measures of efficiency in different regions of Italy. For example, Putnam assessed the responsiveness and effectiveness of local bureaucracy in different regions of Italy by measuring processing time and quality in response to three specific information requests. In the most efficient regions (Emilia-Romagna and Valle d'Aosta, both in the North) two of three problems received thorough replies within a week. In the least efficient regions (Calabria, Campania, and Sardinia all in the South) none of the requests received any attention and only direct inquiry and personal visits lead to a response. A variety of other tests performed by this author reached analogous conclusions.

In summary, this evidence suggests that public employment is skewed in favor of the South without any benefit in terms of superior satisfaction for the public services provided or more frequent use of public services.

¹³ The Post Office and the Railways used to be administrations within the general government. The railway company became a stock company in 1992 and the Post Office was turned into an independent public agency in 1994. As a result the employees of both these entities are not part of the employees of the general government anymore.

¹⁴ These questions were not asked in 1995.

IV. SOCIO-ECONOMIC CONSEQUENCES OF PUBLIC EMPLOYMENT

We now use the 1995 Bank of Italy survey (BIW) to investigate several different socio-economic implications of the high reliance of public employment as a source of income in the South.

A. Wage Differentials

The public sector in Italy pays a relatively uniform wage across regions. Given the large differences in productivity, costs of living, labor market conditions, and private sector wages, public jobs are much more advantageous in the South than in the North if compared to alternative employment opportunities in the private sector. This effect would be even stronger if the labor unions in the private sector did not enforce, at least up to a point, a policy of wage equality for the same sector in North and South.

We begin by testing whether the public sector has a more equal payment structure across regions than the private sector.¹⁵ Data on income are taken from the BIW 1995 and are based on reported monthly after tax income. An important caveat is that since earnings are measured after tax, and given the progressivity of the tax system, this could understate the North South wage differential. An additional potential problem with income data is underreported income from nonmarket activities. Italy has a rather large gray economy, which primarily supplements income of households in the South. This can be a potential problem for two reasons. It leads to an overestimation of the North South income gap, and second it could bias the public/private income comparison. The latter problem may actually lead to an understatement of the public sector wage premium if public employees are more active in the gray market. This may in fact be the case since reduced work hours and relaxed enforcement in public offices allow much time for “second jobs” in the gray economy. For the calculation of the North-South income differential we use supplementary information on cost of living indicators (see Section V).

In Table 6 column one and two we report estimates from standard wage regressions for public employees. In column three and four we run comparable regressions for the private sector. The dependent variable is the log of hourly earnings of full employed workers and excludes self-employed workers. Hourly wages are obtained by dividing monthly earnings by 4.35, the average number of workweeks per month. We then divide this number by reported weekly hours including overtime. The comparison between private and public sector wages may be slightly affected by the fact that overtime may be more widespread in the private sector.

¹⁵ Note that this finding would be consistent with evidence in the United States. As pointed out in the survey by Gregory and Borland (1998) the public sector in the United States is more “egalitarian” than the private sector, paying more uniform wages.

Focusing on the regional effects (the left out category is north) we see that public sector wages are not statistically different between the South and the North. On the contrary the results for the private sector are quite different. In column three we estimate the same wage regression for private employees. We focus again on the regional factors. Southern residents earn on average about 18.9 percent less than their northern counterparts. This result is robust even after we take worker qualifications and industry structure into account (column three). Note that if one takes into account cost of living differences between North and South (see below) and productivity differences, this gap is probably not sufficient to compensate North-South labor market differences.

We now proceed to a more direct evaluation of the public sector wage premium in the North and South. Given the findings in Table 6 we expect that public employees in the South earn a sizeable wage premium over private sector jobholders.

Table 7 reports results from pooled (public and private) wage regressions of full employed workers. The dependent variable is the log of hourly wage income from full time employment. Again we focus first on regional wage effects. Income from labor in the South is 13.6 percent lower than in the North. Also the first column of this table shows that at a national level public employment pays 19.0 percent more than the average private sector job.¹⁶ We now examine whether this benefit differs by region. In column two and three we decompose this effect by estimating the public sector premium for the North and for the South. The public employment premium in the North is still positive but considerably smaller at 12.5 percent. By contrast, in the South of Italy we observe a public employment *premium* in excess of 26.0 percent over local private sector employment. A direct comparison of these two figures suggests that the Southern public sector wage premium is 13.5 percent ($=26-12.5$) higher in the North. This difference is fairly close to an estimate of the difference between cost of living in the North and in the South (as discussed below in Section V). This suggests that perhaps the higher public over private wage premium in the South relative to the same premium in the North is that while private wages adjust, more or less, to local cost of living, public wages do not.

The other controls in the regression appear quite reasonable. Education implies a wage premium; years of work experience increase wage but at a decreasing rate. Females receive a lower wage even controlling for education and years of experience and being married implies a wage premium.¹⁷

¹⁶ This result is consistent with the finding by Gregory and Borland (1999).

¹⁷ A wage premium on being married is commonly found in the labor literature; see for instance Polachek and Siebert (1993). The labor literature has discussed various alternative explanations of this finding.

B. Family Persistence of Public Sector Jobs

In this section we examine whether there is a tendency for members of the same family to be in the public sector: that is, we ask whether family ties to the public sector matter. This is interesting for two reasons. First, if family ties matter, they may indicate that a “culture” of public jobs is diffused in a family. A child raised in a culture of public job security may aspire to the same type of career. Furthermore, if these “cultural” effects are important, they may spill beyond the immediate family to a network of connected individuals. Second, if family connection matters, it could mean that it is easier to obtain a public job if a family member can help you get it by means of personal contacts, inside information, recommendations, favors, etc.

We begin by exploring the influence of the employment history of other family members on the likelihood of public sector employment. We compare the frequency of public sector employment between two groups of individuals: (i) workers with ties to the public sector and (ii) workers with no ties to the public sector. Table 8 considers two types of family ties: between spouses and children-parents ties. In the latter category we can distinguish between two types of children-parents ties: ties between the head of the household and his (her) parents, and the head of the household and his (her) children. The spousal tie is affected by a serious problem of reverse causation and may therefore be biased; in fact, individuals may meet in the workplace and then marry. However, men and women tend to be in different areas of the public sector; for instance, women are disproportionately teachers, while very few men work in the education sector. This problem of reverse causation does not apply to the parent-children relationship.

Table 8 reveals how important family ties are for public employment. Children of public sector employees are almost twice as likely to end up in the public sector, relative to the others. The effect of spouse tie is strong, but perhaps not easily interpretable, as discussed above. Note that the effects of family-ties are prevalent in all the three areas.¹⁸

In addition to being less prone to participate in the labor force in general, children of civil servants appear to have longer unemployment spells if unable to find a public position in the first place. Table 8 documents this latter effect. The conditional probability of household members—aged 26–40—of remaining unemployed if not hired by government tends to rise by 5.9 percent¹⁹ with the number of close family relatives—parents and grandparents—who serve, or have served, as bureaucrats.

¹⁸ We can also see that over-sampling of public sector employees (by a factor of two) affects the level of the reported figures in Table 8. In order to obtain estimates for employment probabilities of public sector, the observed frequencies have to be roughly divided by two.

¹⁹ Calculation based on average marginal effect derived from Logit estimates.

C. Education and Career Choices

The Italian education system lead youngsters to choose their field of study following a certain education track in high school, or at the latest, entering college. Since switching costs across college degrees or high school types are high, we observe rather early in life the specialization and concentration on a certain career track.

To simplify our analysis we distinguish two types of education paths. We define business-oriented degrees as those in the natural sciences, mathematics, engineering, economics and statistics. All the others are defined as nonbusiness degrees. The distribution of both types of degrees is different across regions. In the North about 68 percent of all graduates with a secondary and tertiary education hold a business type degree. In the South this figure is 61 percent. Note that this number is not due to the lower educational attainment in the South since we draw a comparison between skilled workers. This difference, although not extremely large, is statistically significant.

We next test the educational choices, as related to “ties” to the public sector. We restrict our analysis to the parental generation to avoid a bias from multiple family observations. Regardless of the current employing sector, children of parents who work (or worked) in the public sector have a stronger tendency to specialize in nonbusiness-oriented degrees. Table 9 shows that about 65 percent of all household heads with a secondary or tertiary degree hold a business degree. If we divide this group into household heads with and without ties to the public sector, we find a small but statistically significant lower fraction of individuals with a business degree among workers with family ties to the public sector, 62 versus 67 percent. Partly, this imbalance may be due to the fact that children are likely to imitate the education pattern of their parents and therefore choose a school curriculum, which is more conducive to this type of employment. In fact, as reported in the second row of Table 9, the government jobholders have fewer business-oriented degrees.

Interestingly, family ties to the public sector matter also for the career choice of individuals in the private sector employees (third row). The third row of this table shows that only about 72 percent of private employees who have parents in the public sector have a business-oriented degree compared to 78 percent who have no parents in the public sector. This difference is stronger in the Center and South of Italy.

D. Job Search

Our hypothesis is that job search in the South is mainly directed towards the public sector; in fact, given the public wage premium in the South, we expect that a worker who has found a public sector job will hardly ever want to move to the private sector. Unfortunately, we cannot observe the direction of the job search effort of workers. However we can observe the on-the-job search effort of different worker types namely, public and private sector employees.

Columns one to four of Table 10 report Logit estimates of exerted job search effort controlling for employing sector and regional level of unemployment rate. The dependent variable is a dummy variable indicating whether a person has been looking for a job in the recent past.²⁰ As we can see in column 1, holding a job in the public sector (variable *Public*) significantly reduces search effort. This suggests that public sector jobs are secure, and provide a very high level of satisfaction. The t-statistic of this coefficient is above 8. Also the size of the estimated effect is quite dramatic. The calculation of marginal effects evaluated at sample means for model 1 shows that holding a public job reduces the on-the-job search effort by 88 percent from a mean search rate of 8 percent. The public employment effect on job search remains largely unaffected when we control for the regional level of unemployment.

One can think of several explanations of this finding. The most obvious one is that the high wage premium for public jobs in the South discourages anyone for looking elsewhere. In addition to the wage premium, the workload may even be lower in the public sector than in comparable private sector jobs. Examples of short and relaxed hours in the public sector abound and are routinely reported in the press. Figure 1 depicts the distribution of reported hours worked by public sector employees in different regions, and by private sector workers nationwide, including overtime. The difference of the frequencies for public sector compared to private workers is apparent. Almost four out of ten workers employed in private enterprises declare to work an average of 40 hours or more in a week, compared to less than 15 percent in the public sector.

An additional possible explanation of the low search effort in the public sector is that the public sector employment generates skills, which are not useful in the private sector, and, therefore, significantly reduces alternative employment opportunities. One way to test for this effect is to utilize the results from our previous section on business type degrees. If search effort is correlated to marketability of a worker's skills, then people with nonbusiness type skills should exert less search effort. We test for this effect in column three of Table 10. Public sector workers with a business degree do not exert more search effort, as the insignificant interaction term indicates (*Business degree x Public*).²¹ Finally, we examine in column 4 whether the Southern residents search less than Northerners when they hold a public sector job. The interaction variable *Public x South* is borderline (in)significant at the 10 percent level. This weakly states that Southerners are searching less on the job than their northern counterparts. This evidence, although not overly strong, is consistent with the result that public sector jobs are particularly valued in the South.

²⁰ The sample is restricted to full employed workers.

²¹ Note that the sample in column three has been restricted to workers with at least a high school degree.

E. Entrepreneurship

In this section we examine whether a large dependence on public employment deters the development of entrepreneurial activities. This may be true for two reasons. First the availability of secure (and easy) jobs may discourage searching for other options. Second a diffuse “culture” of job security may increase risk aversion and discourage risk-taking activity. This issue is particularly important for Italy, since its economy relies more than other OECD countries on small business activities.²²

We define an entrepreneurial activity through the following four categories: (1) professionals; (2) owner of business; (3) independent worker or craftsman; (4) owner or assistant in a family business. Table 11 reports the empirical results from Logit estimation where the dependent variable is a binary indicator, equal to one if a respondent pursues an entrepreneurial activity (as defined above) and zero otherwise. The sample is limited to heads of households who are older than age 20.

In regression one we estimate entrepreneurship as a function of the level of schooling, work experience, and two regional variables: regional unemployment rate and the fraction of public employees in the labor force. We find that education increases the likelihood of entrepreneurship while the regional variables have no significant impact. The level of public employment has a negative sign, but its effect is insignificant. In column two we add information on the regional economic performance (Regional output over regional population). We find that residents who live in a highly productive region are less likely to undertake an entrepreneurial activity. Probably, low economic activity encourages self-employment, due to lacking alternative employment opportunities. What is more interesting in this model is, however, the public employment effect. The estimated coefficient on public employment is negative and significant at the 5 percent level. Thus, even though a lower productivity level on average would tend to encourage entrepreneurship, the presence of a large public sector tends to offset this effect.

Better access to financial means play an important role in the decision of self-employment. The intergenerational character of the data set allows us to use two variables. One measures access to parental wealth proxied by the employment position (management) of the father of household head. The second variable indicates whether the father himself was self-employed. The results on these two additional variables are reported in model three of Table 11. The propensity of entrepreneurship is significantly increased by the two family

²² A recent OECD study (1995) reports that Italy has a high number of small and medium sized firms in its core industries. About 36.8 percent of all employees in Italy work in firms with less than 200 employees compared to 20.8 percent in Germany, 25.8 percent in France and 34.1 percent in Japan.

background variables. Both coefficients are positive, as one would expect. The public employment effect remains unaffected by the additional controls.

V. THE SIZE OF REGIONAL REDISTRIBUTION THROUGH PUBLIC EMPLOYMENT

We now evaluate the size of the regional redistribution obtained through public employment. We distinguish between two components. One is the quantity effect, (Q) namely the “excess” number of public jobs. The other is the price effect, (P) that is the “wage premium” paid to public employees in the South, to be defined below. Our estimate of the implicit interregional transfer (TR) through public employment is given by:

$$\begin{aligned} \text{TR} &= (E_C - E_B) W_C + E_B (W_C - W_B) & (1) \\ &= Q W_C E_C + P W_C E_B \end{aligned}$$

where, $Q \equiv (E_C - E_B)/E_C$ and $P \equiv (W_C - W_B)/W_C$.

In (1) TR is the implicit monetary value of the interregional transfer, E_C is the current number of public employees in the South, E_B a numerical benchmark to be specified below, W_C the average wage rate currently paid to public employees in the South, and W_B a benchmark wage to be defined below.²³ We call the expression $Q=(E_C - E_B)/E_C$ the quantity effect and $P = (W_C - W_B)/W_C$ the price effect. After rearranging of terms and substituting for E_B we obtain the following expression for TR:

$$\text{TR} = W_C E_C (Q + (1-Q) P). \quad (2)$$

The main task in determining the quantity effect is to construct a baseline rule for the level of public employment, which is to identify E_B . Since it is not obvious how to construct this baseline, we provide several different estimates for E_B . Also, in order to highlight the North-South comparison we use only the characteristics of the northern regions as the determinants for the baseline scenario for the South.²⁴

In order to estimate the price effect, P, we need to compute W_B , the “benchmark” salary for public employees in the South. This task can be tackled from two angles. First, one can define the benchmark in terms of the wage rate that would be paid if the public wage policy were to conform to the norm of equalizing regional public compensations *in real*

²³ Note that, when calculating TR, we multiply the excess wage payment ($W_C - W_B$) by the base employment level E_B and not by E_C . We leave out the amount $(E_C - E_B) (W_C - W_B)$ from this computation, since this part of the transfer payment is already accounted for in the first term $(E_C - E_B) W_C$.

²⁴ Also, the presence of the capital in the Lazio region of the Centre makes the interregional comparison including the Centre more cumbersome.

terms. Secondly, one can construct an institutional counterfactual and ask which wage rate would be paid in the Southern Region if Italy were not a unified country. A natural candidate for W_B would be, in this case, a measure of the nominal wage prevailing in the private sector to remunerate labor of comparable quality. We pursue both strategies below.

In Subsection A we present a range of different measures of the quantity effect. In Subsection B, we pursue the two different methods to estimate the price component. Finally, Subsection C calculates the total monetary transfer from North to South through public employment.

A. The Quantity Effect

One-dimensional baseline estimates

The simplest approach for the calculation of Q is to assume that the South should have the same level of public employment per unit of a particular characteristic as the North. These one-dimensional public employment rules assume that the appropriate level of public employment is related to only *one* specific regional attribute. We present four alternative attributes: size of labor force, employment, regional output, and regional level of consumption. The baseline estimates for the North are then calculated as the ratio of northern public employment over the specific regional characteristics.

In Table 12 (first row) we report several different baseline estimates derived from northern regional observations. The baseline estimate in column three for instance is obtained by dividing the northern public employment by the total northern employment, and it implies a baseline fraction of 12.1 percent of the employed population.

This number appears to be within reasonable limits. In Germany this figure was 13.5 percent in 1996 and 9.1 percent in the United States in 1995.²⁵ The regions of Lombardia and Veneto in the North are in all categories below these baselines, while the region of Liguria, and the northern autonomous provinces of Trentino and Alto Adige are above.

All Southern regions have excess public employment according to all four baseline rules. In the second row of Table 12 we report estimates of excess public employment for the South as a whole. Predicted excessive employment is measured as a fraction of the respective Southern regional public employment. The smaller estimates of excess employment are based on the labor force and consumption rules, and lie between 32 and 37 percent of total Southern public employment.

²⁵ Calculated as the ratio of federal, state, and local public employees over all nonagricultural employees. Data source: Statistisches Zentralamt Wiesbaden Germany and Economic Report of the President 1998.

These figures are lower *bounds* for two reasons. Estimates are higher when we take the full economic disparities into account. The employment and output-based rules imply that 43 percent to 55 percent of the public employment in the South is above the baseline limits. Two regions in South, Molise and Basilicata, have the highest “excessive” public employment.

Multi dimensional estimates: Wagner regressions

In this section we estimate a regional model of public employment in the spirit of Wagner’s law.²⁶ We construct a provincial data set derived from residential information in the Bank of Italy survey (BIW, 1993, 1995). Each individual in the survey can be identified by his or her province of residence and reports the sector he of employment (i.e. private versus public). This information allows us to develop provincial attributes by calculating provincial population averages. In total we obtain information on 99 provinces which can be mapped to the 20 main regions in Italy.²⁷ In order to maximize the degrees of freedom, we expand our data set and merge data from the 1993 survey with the 1995 survey. We end up with an average of 484 observations per province: the lowest number of observations is 36 and the maximum is 3,135. All provincial characteristics are then derived by calculating weighted means of individual observations using population weights from the survey.²⁸ Income variables are expressed in 1993 lira.

Given the data problems and the way we have to construct these provincial data, the results of these Wagner regressions have to be taken as suggestive and indicative.

In Table 13 we report the regression results for the northern provinces, where the dependent variables is the fraction of public employment as of total employment. Since the choice of what is counted as a northern province is somewhat arbitrary we choose two different definitions presented in the two columns of Table 13. The more narrow definition includes only provinces from regions 1–6.²⁹ In the second definition we include also Liguria and Emilia-Romagna.

²⁶ There is a rich empirical literature testing the time series implications of this proposition. Relatively little research has been conducted using cross sectional information. One exception is Eberts and Gronberg (1992).

²⁷ Among these provinces 43 are part of the North, and 35 are part of the South. The number of provinces per region varies from 2 to 10.

²⁸ Since the 1993 and the 1995 survey contain the same questions, we do not need to modify the variables we are interested in.

²⁹ North (1–6): Piedmont, Lombardy, Trentino, Alto Adige-South Tyrol, Veneto, Friuli-Venezia Giulia.

The model with the best fit is the narrower defined northern model. The R^2 of 0.31 is about twice as high as in the second model. All the control variables point in the expected direction. Higher levels of income lead to more public employment. The estimate in column one implies that provinces with a 10 percent higher level of income employ 9.5 percent more public employees.³⁰ This effect is somewhat weaker in the second model.

As additional determinants of public employment we used information on the employment structure of a province, the fraction of old (older than 70) and young residents (younger than 15), and the degree of urbanization. We also use as a control the fraction of employment in the service industries. More employment in this sector implies greater productivity and smaller firm size, both boosting the demand for tax administration. It also indirectly measures women's participation and thus the need for kindergarten and after school services. All of these measures have a positive sign in the first two columns, and again are weaker in our second model.

We now turn to the estimation of public employment in the South relative to the benchmark. Predicted levels of public employment are obtained by using the estimates from Table 13. However, before we can derive these estimates we need to tackle two issues. First, the level of income in the South has not been adjusted for differences in the cost of living. If we evaluate the Wagner model for the North at the nominal level of income in the South we would overestimate the real income differences and thus overestimate the level of excessive public employment. This is, because the price level in the South is lower, and therefore the nominal income of the South underestimates the real income of the South relative to the North. We correct for this difference by increasing the level of income by 15 and by 25 percent.³¹ Note that these corrections will lead to *lower* estimates of excessive public employment. A second issue is the size difference of the Southern provinces. In order to obtain a combined estimate for total Southern excessive public employment we need to weigh the provincial predictions before we can add them up. This is done by applying provincial weights derived from population weights from the BIW 1993 and 1995.

Table 14 below summarizes the results from this exercise. The multivariate model predicts an excessive employment rate between 37 and 43 percent. These results do not change substantially if the nonsignificant explanatory variables of the Wagner regressions were left out. The regions with the highest levels of excessive public employment according to this measure are Campania, Puglia, and Calabria and differ from the one-dimensional estimates. Finally, we can note that regional per capita income and the rate of excessive public employment are negatively correlated with a coefficient of -0.33 (-0.21) for model 1 (2). This observation hints to the use of public employment as a redistributive device.

³⁰ Evaluated at the mean public employment rate.

³¹ In the next section we provide estimates of the difference in cost of living, which are consistent with the range of these adjustments.

We can now turn back and compare these results with the results we have obtained from the one-dimensional estimation. The estimates in Table 14 are in the same range as the one-dimensional estimates, but vary less. To sum up, one-dimensional estimates of excessive public employment lie between 33 and 55 percent of total public employment in the South. The multivariate estimates lie between 37 and 43 percent.

B. The Price Effect

Price effect 1: Cost of living adjustment

First we estimate by how much the public sector would have to reduce wages in the South in order to equalize pay in real terms, between the North and the South.

Our estimates for regional price differences are derived from cost of living data for Italian cities. As mentioned above ISTAT, the Italian statistical agency, does not provide price level indices for different regions. We therefore use data of city price deflators from 1947–1995 in order to calculate the cumulative price divergence between the North and the South. The assumption we make is that the cost of living difference between the North and the South was small at the beginning of the period. We use data from six Northern and seven Southern cities.³² The accumulated difference of the average price index amounts to 14.3 percent by 1995.³³

Price effect 2: Adjustment to public-private pay structure

An alternative way to calculate the price effect is to ask which wage rate would be paid in the Southern region if Italy were not a unified country. A natural determinant for the Southern baseline wage, W_B , would be the wage rate that generates the same public-private sector pay structure as in the North. This comparison would not only account for differences in the cost of living, but it also takes into account regional differences in productivity.

We run two types of wage regressions, one for the North in order to determine the base public-private sector wage structure, and one for the South. Results are reported in Table 15. We assume that public sector work is similar to the service sector, and therefore the public-private sector wage comparison should focus upon the service sector. We use the

³² Cost of living data have been available for the following cities: North: Turin (Piedmont), Genoa (Liguria), Trento (Trentino), Triest (Friuli), Bologna (Emilia-Romagna), Venezia (Veneto). South: Campo Basso (Molise), Napoli (Campania), Bari (Puglia), Potenza (Basilicata), Reggio Calabria (Calabria), Palermo, Catania (Sicily).

³³ We also derived alternative measures of real income differences from wage regressions of the private sector. Our estimates are very similar and range between 15 and 18 percent. These regression results are available from the authors upon request.

following service sector industries: banking and insurance, real estate, and personal services. However, since wages in the banking and insurance sector are to a large extent set on the national level, the Southern public-private sector comparison is somewhat biased. For this reason we run a separate set of regressions specifically controlling for the banking and insurance sector from the private service sector.

In order to determine the Northern pay structure we run a pooled (public and private) wage regression for full employed northern residents only. We use the same control variables as above, but also include a dummy for employment in the private service sector. The left out category is public sector employment. We find that in the North the private service sector pays on average 7.2 percent (column one) less than the public sector. When we leave out the banking sector the differential is substantially larger at 18 percent. In other words, employees in the public sector earn more than their private (service) sector counterparts. We can now compare this finding with estimates from the South (column three and four in Table 15). The wage differential between public and private service sector employees is much larger. On average public employees earn about 24.9 percent more than their private sector counterparts if we include the banking sector and a stunning 40.5 percent more if we drop the banking sector.

What we are interested in however is the amount by which the Southern wage would have to be adjusted in order to end up with the northern pay structure. If the Northern public-private pay structure were to prevail in the South then our estimates indicate that public wages would have to adjust downwards by 17.7 percent. These estimates are slightly lower than the cost of living estimates. If we drop the banking sector from our comparison then the wage gap increases to 15.6 percent. Again we find that the estimated wage adjustments are similar to our previous results.

C. The Total Cost of Excessive Public Employment

We are now able to provide an estimate of the cost of excessive public employment. We recall from earlier that interregional transfer cost is defined as:

$$TR = W_C E_C (Q + (1-Q) P)$$

where $W_C E_C$ is the current expenditure on public employment in the South and Q and P are the quantity and price effect respectively. The results from section 5.1 indicate that the excessive rate of public employment in the South, Q , lies between 33 and 55 percent with a more narrow range of 37–44 percent from the Wagner estimates. On the other hand the price effect, P , which measures the excessive payment levels, ranged roughly from 11 to 18 percent. We can utilize these two pieces of information and calculate the combined effect as described in the equation above. Figure 2 below depicts the plane for $Q + (1-Q) P$ given the range for P and Q . The total effect ranges between a minimum at 40.3 percent and a maximum of 63.1 percent of the public sector wage bill for the South. If we believe that the Wagner regressions provide a more precise estimate for the quantity effect, then we end up with a range of between 43.1 and 52.5 percent. The precise meaning of this estimate is that

43–52 percent of the Southern wage bill lies above the northern benchmark estimates for public employment and public wages.

VI. CONCLUSION

This paper documents that the allocation of public employment in Italy is an important source of geographical redistribution between regions, in particular between the North and the South. About half of the wage bill of the South can be thought of as redistributive, that is, in excess of what it “should be” relative to various ways of calculating a benchmark. This amount is the result of a quantity and a price effect. The former is due to the fact that there are many more public employees in the South relative to the North; the second arises because, while public wages are very similar across regions, the price level instead is lower in the South, so that real wages are higher in the South.

The heavy reliance on attractive public jobs in the South leads to a vicious circle, in which private sector jobs are not sought after. This also implies that for private entrepreneurs it is expensive to offer jobs as attractive to those offered by the public sector. The result is that the economy in the South is overly dependent on public jobs that have the nature of permanent welfare. The problem is compounded by the use (and abuse) of disability pensions, which are also concentrated in the South and in many cases are another source of permanent unemployment compensation.

As shown by our analysis of the responses to the Bank of Italy survey, heavy reliance on public jobs leads to a series of educational choice and attitude toward risk which may self reinforce a tendency to escape from private markets. If this is true this suggests that this form of geographical redistribution (public employment) creates perverse incentives.

Table 1. Variable Definitions

Variable	Description	Year	Source
Public Employees	Total number of government employees including national and local employees	1995	Ital. Treasury
Postal Workers	Total number of Postal Workers	1995	Ital. Treasury
Railroad Workers	Total number of Railroad Workers	1997	Ital. Treasury
Police	Total number of police employees	1995	Ital. Treasury
Tax inspectors	Total number of tax inspectors	1996	Ital. Treasury
Regional Product	Regional state product	1995	ISTAT
Regional U-Rate	Regional unemployment rate	1995	ISTAT
Regional Pub-Emp Rate	Fraction of public employees in the regional labor force (excludes military, postal and railroad workers)	1995	ISTAT, Ital. Treasury
Class Size	Number of students per session	1995	ISTAT
Log hourly wages	Log of hourly disposable labor income	1995	BIW
Highschool Degree	Highest degree: Highschool		
College Degree	Highest degree: College	1995	BIW
Parent Schooling	Years of schooling: Head of Household	1995	BIW
Business Degree	Dummy: holding a business type degree (for a definition see section 4.3)	1995	BIW
Years Work Experience	Years of reported work experience	1995	BIW
Firm size: 20-99 Empl	Dummy: Reported Number of Employees	1995	BIW
Firm size: 100-499 Empl	Dummy: Reported Number of Employees	1995	BIW
Firm size: >500 Empl	Dummy: Reported Number of Employees	1995	BIW
White collar	Self described employment type	1995	BIW
Teacher	Self described employment type	1995	BIW
Mid management	Self described employment type	1995	BIW
Top management	Self described employment type	1995	BIW
Big City	Lives in City > 500.000	1995	BIW
Father – Manager	Dummy: Father has/had managing position	1995	BIW
Father – Self employed	Dummy: Father is/was self employed	1995	BIW
Family Ties	Dummy: indicates whether parent or other family member is/was employed in the public sector	1995	BIW
Dependency Rate	Fraction of population younger then 15 and older than 75.	199319 95	BIW
Urbanization Rate	Fraction of population living in city > 50.000	199319 95	BIW

Sources: ISTAT (1996a,b); BIW (1995); Il Conte Annuale, Ministero del Tesoro (1995, 1997).

Note: BIW: Bank of Italy Survey on Income and Wealth (1993, 1995).

Table 2. Descriptive Statistics of BIW 1995

Variable	Mean	Std. D.	Min	Max
Region				
North	0.448	0.497	0	1
Centre	0.196	0.397	0	1
South	0.354	0.478	0	1
Household Structure				
Parents (fraction)	0.640	0.479	0	1
Children (fraction)	0.337	0.473	0	1
Demographics				
Age	36.73	13.01	15	62
Male	0.520	0.499	0	1
Married 1/	0.589	0.491	0	1
Lives in city > 500.000	0.136	0.343	0	1
School	9.737	3.805	3	20
Highschool	0.363	0.480	0	1
College	0.071	0.257	0	1
Employment Status				
Unemployed	0.165	0.371	0	1
Retired	0.227	0.418	0	1
Labor force Participation	0.634	0.481	0	1

Source: BIW (1995).

1/ Also includes unmarried people living with a partner.

Table 3. Regional Economic Performance and Public Employment

	North	Centre	Centre w/o Lazio	South
Regional Product over National Product (GDP)	55.1	20.5	10.6	24.3
Regional Population over total Population	44.4	19.2	10.1	36.4
Participation Rate 1/	62.5	59.7	62.3	51.5
Unemployment Rate	6.7	10.3	8.2	21.0
Public employees per 100 residents	5.0	6.8	5.9	6.0
Public employees per 100 employed	12.4	18.6	15.4	22.1
Public employees per unit of regional product 2/	124.0	194.4	155.0	275.1
Police officers per 1000 crimes denounced 3/	72.9	122.5	134.1	108.3
Tax inspectors per unit of regional tax yield 2/	11.6	14.2	...	59.9
Postal workers per 100,000 units of correspondence 4/	179.3	566.2	...	1,782.7
Railways workers per 100,000 tons of goods shipped 5/	71.2	186.9	121.9	327.9
Age Structure: 15 and younger in Population	12.4	13.2	12.1	16.1
Age Structure: 65 and older in Population	18.2	18.4	20.8	13.8
Class Size 6/ (primary school)	16.2	16.9	15.9	18.0
Class Size 6/ (secondary school)	20.7	20.5	20.5	21.0

Sources: ISTAT (1996a,b); Ministero del Tesoro (1996).

1/ Employed and unemployed as a fraction of population between 15 and 65.

2/ Regional product and regional tax yield in Lit 100 billion. Taxes (collected in 1996) include: VAT, Personal and Corporate Income tax, the so-called "local tax on incomes" (ILOR, abolished in 1997), and Customs duties.

3/ Police officers in 1996 per 1000 crimes denounced by the police in 1995.

4/ Number of Post Office employees per 100,000 letters and parcels sent in 1997.

5/ Railways workers in 1997 per 100,000 tons of goods shipped in 1996.

6/ Class size defined as students per session.

Note: All data refer to 1995, unless otherwise indicated.

Table 4. Recent Use of Public Services. Yes=1, No=0

	Utilization of Public Services			
	North	Centre	South	
Use of public transportation services	0.56	0.53	0.39	(*)
Use of public health services	0.22	0.21	0.20	
Medical tests in public laboratories	0.62	0.67	0.49	(*)
Medical examinations (public)	0.52	0.48	0.41	(*)
Use of medicines	0.81	0.84	0.79	(*)
Nursery school attending	0.05	0.06	0.08	(*)
Public primary, secondary school attending	0.20	0.27	0.31	(*)
Public university attending	0.09	0.11	0.12	(*)

Source: BIW (1993).

Note: (*) Indicates statistically significant differences of group means at 1 percent level.

Table 5. Quality of Public Services. Subjective Evaluation: 1=Worst, 10=Best

	Quality Assessment			
	North	Centre	South	
Public transportation functioning	6.09	5.45	4.52	(*)
Health services functioning	6.03	5.21	4.00	(*)
University functioning	6.31	5.79	4.76	(*)
Municipality offices functioning	6.27	5.57	4.60	(*)
Municipality street cleaning	6.20	5.70	4.52	(*)
Public parks, gardens availability	6.11	5.53	3.68	(*)
Public water quality	5.01	4.54	3.91	(*)
Safety, crime control	5.91	5.70	4.02	(*)
Nursery school functioning	7.16	6.76	5.38	(*)
Primary, secondary school functioning	6.97	6.68	5.65	(*)

Source: BIW (1993).

Note: (*) Indicates statistically significant differences of group means at 1 percent level.

Table 6. Wage Regressions for the Private and Public Sector
 Dependent Variable: log hourly earnings from full-time employment

	Log Hourly Wages		
	Public sector	Private Sector	
	(1)	(2)	(3)
Constant	4.480 (105.2)	4.163 (159.23)	4.180 (156.18)
High School degree	0.063 (3.50)	0.095 (6.73)	0.091 (6.51)
College degree	0.246 (10.3)	0.252 (8.23)	0.242 (7.93)
Years Work Experience	0.037 (8.37)	0.042 (13.11)	0.041 (12.97)
Years Work Experience ²	-0.001 (-5.96)	-0.001 (-9.41)	-0.001 (-9.24)
Female	-0.105 (-7.66)	-0.115 (-9.56)	-0.106 (-8.52)
Married	0.064 (4.04)	0.100 (7.60)	0.101 (7.70)
Centre	0.011 (0.66)	-0.070 (-4.99)	-0.072 (-5.21)
South	-0.014 (-0.99)	-0.189 (-13.79)	-0.192 (-14.00)
White collar	0.032 (1.63)	0.165 (11.00)	0.149 (9.49)
Teacher	0.355 (13.94)		
Mid management	0.116 (4.00)	0.288 (11.53)	0.259 (10.14)
Top management	0.292 (7.21)	0.616 (13.32)	0.588 (12.69)
Firm size: 20-99 Employees		0.114 (7.94)	0.110 (7.54)
Firm size: 100-499 Employees		0.190 (11.36)	0.177 (10.26)
Firm size: > 500 Employees		0.275 (17.64)	0.247 (15.03)
Industry dummies	No	No	Yes
Adj. R ²	40.4	47.0	47.8

Source: BIW (1995).

Note: t-statistics in parenthesis. Left out category for work qualification are blue collar workers. Left out category for industry dummies is manufacturing. The additional controls included in the regressions are the following dummies: invalid worker, sick worker, big city, all statistically insignificant.

Table 7. Pooled Wage Regression: Private and Public Sector
 Dependent Variable: log hourly earnings from full-time employment

	Log Hourly Wages		
	All Regions	North	South
	(1)	(2)	(3)
Constant	4.168	4.238	3.85
	(182.1)	(147.22)	(78.5)
High School degree	0.213	0.189	0.271
	(21.2)	(14.35)	(12.9)
College degree	0.507	0.443	0.631
	(30.9)	(19.54)	(20.62)
Years Work Experience	0.048	0.046	0.055
	(18.0)	(13.12)	(9.63)
Years Work Experience ²	-0.001	-0.001	0.001
	(-11.9)	(-8.24)	(-6.67)
Female	-0.099	-0.088	0.091
	(-10.3)	(-7.06)	(-4.44)
Married	0.108	0.074	0.183
	(9.9)	(5.26)	(7.99)
Mid management	0.094	0.119	0.057
	(5.3)	(5.18)	(1.46)
Top management	0.21	0.290	0.137
	(7.2)	(7.56)	(2.16)
Centre	-0.073		
	(-6.2)		
South	-13.1		
	(-12.2)		
Public Sector	0.190	0.125	0.260
	(18.1)	(8.69)	(12.56)
Adj. R ²	44.3	41.6	50.9

Source: BIW (1995).

Note: t-statistics in parenthesis. Additional controls included in the regressions are the following dummies: invalid worker, sick worker, big city, all statistically insignificant.

Table 8. Family Ties in The Public Sector: Frequency of Public Employment with Family Ties to the Public Sector 1/

(In percent of all employees)

	Children-Parents Ties				Spousal Ties	
	Head of Household and his/her Parents		Children of Head of Household		Spouse of Head of Household	
Family Ties	Yes	No	Yes	No	Yes	No
North	31.8	21.3	17.0	10.9	58.4	25.4
Centre	36.2	27.4	20.8	10.3	57.4	27.1
South	49.0	29.9	31.1	14.3	78.5	35.6

Source: BIW (1995).

1/ Family ties to the public sector are defined as having one or more immediate family member (parent or spouse) who holds or held a job in the public sector. All group mean differences are statistically significant.

Table 8b. Unemployment of Young Italians (Age 25–40) and Family Ties 1/ (Logit)
 Dependent Variable: Unemployed 2/ 1=yes 0=no.

	Unemployment Incidence 2/	
Constant	1.294	
	(1.9)	
Family ties 1/	0.309	
	(2.1)	
Highschool degree	-0.492	
	(-2.8)	
College degree	-0.598	
	(-2.0)	
Years Work Experience	-0.418	
	(-4.4)	
Years of Work Experience ²	0.014	
	(3.9)	
Centre	0.805	
	(4.2)	
South	1.670	
	(10.5)	
Parent-Schooling	-0.014	
	(-0.7)	
Female	0.140	
	(1.0)	
Married	-0.519	
	(-1.2)	
Log Lik	-683.6	

Source: BIW (1995).

1/ Family ties to the public sector are defined as having one or more immediate family member (parent or spouse) who holds or held a job in the public sector. Children with a public job have been excluded from the sample.

2/ Incidence of unemployment conditional on not having been hired by public sector.

Note: t-statistics in parenthesis.

Table 9. Employees (percent) with a Business-Oriented Degree 1/ by Family Ties 2/

	Total	Has Family Member in Public Sector	No Family Member in Public Sector	
	(1)	(2)	(3)	
All employees	65.3	62.0	67.5	(*)
Public employees	53.1	52.7	53.4	
Private employees	75.9	71.8	78.4	(*)
Private employees: North		76.8	79.1	
Private employees: Centre		70.6	79.0	
Private employees: South		65.2	74.8	(*)

Source BIW (1995).

1/ Business degree is defined as field of specialization in economics, mathematics, statistics, engineering, and general science in college, and engineering in high school.

2/ Family ties to the public sector are defined as having one or more immediate family member (parent or spouse) who holds or held a job in the public sector.

Note: (*) Differences for one sided tests are statistically significant at the 5 percent level.

Table 10. Job Search Activity in Private and Public Sector (Logit)
 Dependent Variable: Job search 1=yes 0=no

	Job Search			
	(1)	(2)	(3)	(4)
Constant	-0.955	-1.250	-1.417	-1.286
	(-4.27)	(-5.00)	(-2.38)	(-5.12)
Years of Schooling	0.005	0.005	0.037	0.006
	(0.34)	(0.31)	(0.99)	(0.37)
Years Work Experience	-0.062	-0.063	-0.087	-0.062
	(-10.68)	(-10.77)	(-8.80)	(-10.72)
Female	-0.093	-0.079	-0.201	-0.077
	(-0.87)	(-0.74)	(-1.27)	(-0.72)
Public	-1.406	-1.421	-1.054	-1.244
	(-8.72)	(-8.80)	(-4.23)	(-6.67)
Public x South				-0.531
				(-1.65)
Business Degree			-0.022	
			(-0.11)	
Business Degree x Public			-0.109	
			(-0.30)	
Centre	-0.002	-0.108	0.110	-0.115
	(-0.01)	(-0.77)	(0.57)	(-0.82)
South	0.193	-0.393	-0.637	-0.312
	(1.60)	(-1.52)	(-1.62)	(-1.18)
Regional U-Rate		4.442	5.166	4.451
		(2.62)	(2.03)	(2.63)
Log Lik	-1408.1	-1404.5	-667.1	-1403.1

Source: BIW (1995).

Note: t-statistics in parenthesis. Model 4 restricted to workers with at least a high school degree.

Table 11. Model of Entrepreneurial Activity (Logit)
 Dependent Variable: Entrepreneur: 1=yes 0=no

	Entrepreneur		
	(1)	(2)	(3)
Constant	-0.747	1.644	1.364
	(-1.96)	(2.04)	(1.64)
Years of Schooling	0.035	0.037	0.023
	(2.92)	(3.09)	(1.89)
Years Work Experience	-0.057	-0.056	-0.051
	(-2.72)	(-2.64)	(-2.34)
Years Work Experience ²	0.001	0.001	0.001
	(4.10)	(4.01)	(3.38)
Regional Unemployment-rate	0.959	-3.598	-3.313
	(1.23)	(-2.32)	(-2.07)
Regional output / GDP		-63.656	-60.625
		(-3.37)	(-3.11)
Regional Pub-Emp Rate	-0.884	-2.210	-2.188
	(-0.93)	(-2.15)	(-2.07)
Father - Manager			0.469
			(2.17)
Father - Self employed 1/			0.858
			(9.89)
Log Lik	-1816.3	-1810.6	-1727.9

Source: BIW (1995).

1/ Father either professional, self-employed, owner of business, or entrepreneur.

Note: t-statistics in parenthesis.

Table 12. One-Dimensional Baseline Rules and Excess Public Employment in the South

	Baseline Rules			
	Labor Force	Employment	Regional Product 1/	Regional Consumption 1/
	(1)	(2)	(3)	(4)
Baseline Rule	0.0113	0.121	1.636	2.331
Predicted excess public employment in South (%)	32.2	43.5	54.9	37.6

Sources: Ministero del Tesoro (1996); and ISTAT (1996a).

1/ Measured in billion of lira.

Table 13. Wagner Regression of Public Employment for Northern Provinces

	Public Employment Rate 1/	
	"Alps" Region 1-6	Total North Region 1-8
	(1)	(2)
Constant	-2.279 (-2.02)	-1.929 (-1.68)
Log of total income 2/	0.2273 (2.03)	0.1865 (1.62)
Service sector 3/ empl among private sector	0.3605 (1.84)	0.2102 (0.92)
Dependency Rate 4/	0.0195 (0.04)	0.3323 (1.36)
Old people 5/ living w/o family members	0.2259 (0.85)	0.3055 (1.14)
Urbanization 6/ Rate	0.0780 (1.36)	0.0564 (1.8)
Adj. R ²	0.33	0.18
Number of Observations	30	43

Sources: BIW (1993) and (1995); plus regional data from ISTAT.

1/ Public employment as a fraction of all provincial employment 1995 income has been deflated to 1993 using the CPI deflator;

2/ Disposable total income

3/ Defined as bank insurance, real estate and personal services and communication and transportation.

4/ Fraction of population younger than 15 and older than 75.

5/ Defined as 70 years an older.

6/ Defined as the fraction of a provincial residents living in a city with more than 25.000 inhabitants.

Note: t-statistics in parenthesis. For definition of regions see text.

Table 14. Predicted Percentage of Excessive Public Employment in Southern Provinces
Based on Northern Wagner Regression

	Northern Provinces	
	"Alps" Region 1-6	Total North Region 1-8
	(1)	(2)
Southern income adjusted by 15% 1/	43.2	42.9
Southern income adjusted by 25% 1/	37.8	38.5

Sources: BIW (1993) and (1995); plus regional data from ISTAT.

1/ Southern income has been increased by 15 percent (25 percent) to adjust for regional differences in cost of living.

Note: Excess public employment is calculated as the difference between the average actual Southern public employment and predicted employment rate divided by the actual rate. Predictions are weighted and based on Southern evaluations of Northern Wagner-regression. As weights we use provincial sums of analytical weights from BIW.

Table 15. Wage Regressions for the North and South: Public-Private Pay Structure
 Dependent Variable: log hourly earnings from full time employment

	Log Hourly Wages			
	North		South	
	(1)	(2)	(3)	(4)
Constant	4.373	4.382	4.109	4.133
	(128.4)	(126.6)	(75.3)	(75.4)
Highschool Degree	0.184	0.174	0.269	0.245
	(13.9)	(12.9)	(12.8)	(11.5)
College Degree	0.438	0.427	0.629	0.602
	(19.3)	(18.3)	(20.5)	(19.2)
Years Work Experience	0.045	0.045	0.054	0.052
	(13.1)	(12.9)	(9.6)	(9.2)
Years Work Experience ²	-0.001	-0.001	-0.001	-0.00
	(-8.3)	(-8.1)	(-6.6)	(-6.3)
Female	-0.094	-0.081	-0.092	-0.074
	(-7.5)	(-6.3)	(-4.4)	(-3.6)
Married	0.075	0.072	0.183	0.185
	(5.3)	(5.0)	(7.9)	(8.0)
Mid management	0.111	0.099	0.055	0.025
	(4.8)	(4.0)	(1.4)	(0.6)
Top management	0.283	0.265	0.136	0.135
	(7.4)	(6.6)	(2.1)	(2.0)
Non-Service Sector	-0.139	-0.141	-0.263	-0.270
	(-9.3)	(-9.4)	(-11.7)	(-12.1)
Service Sector	-0.072		-0.249	
	(-3.4)		(-7.9)	
Service Sector w/o banks and insurance		-0.180		-0.405
		(-7.2)		(-10.8)
R ²	41.9	41.3	50.9	52.4

Source: BIW (1995).

Note: t-statistics in parenthesis. Left out industry category is public employment. Service sector consists of: Banking and Insurance, Real Estate, Personal Services, Nonservice Sector: Agriculture, Manufacturing, Telecommunication, Construction, Transportation. Additional controls included in the regressions: invalid worker, sick worker, big city, all statistically insignificant.

Figure 1. Distribution of Hours Worked per Sector and Region

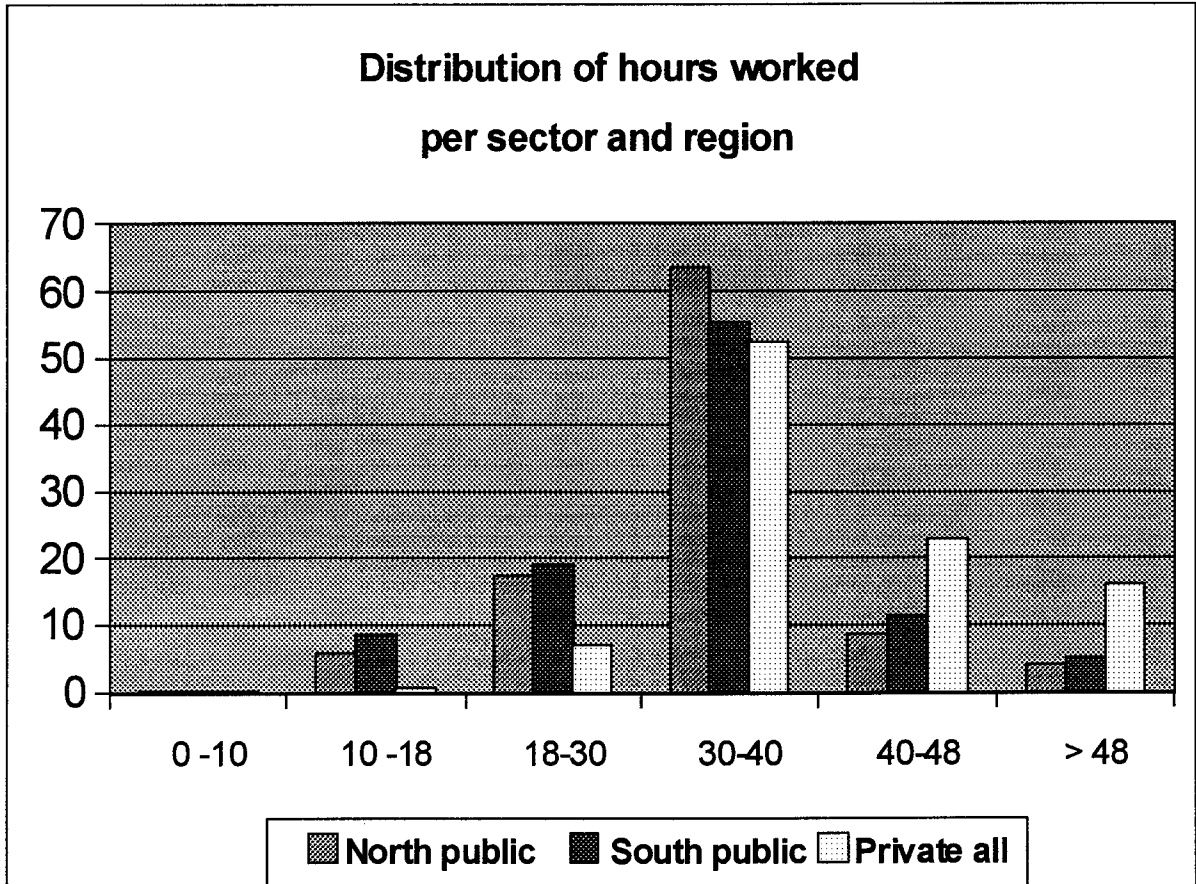
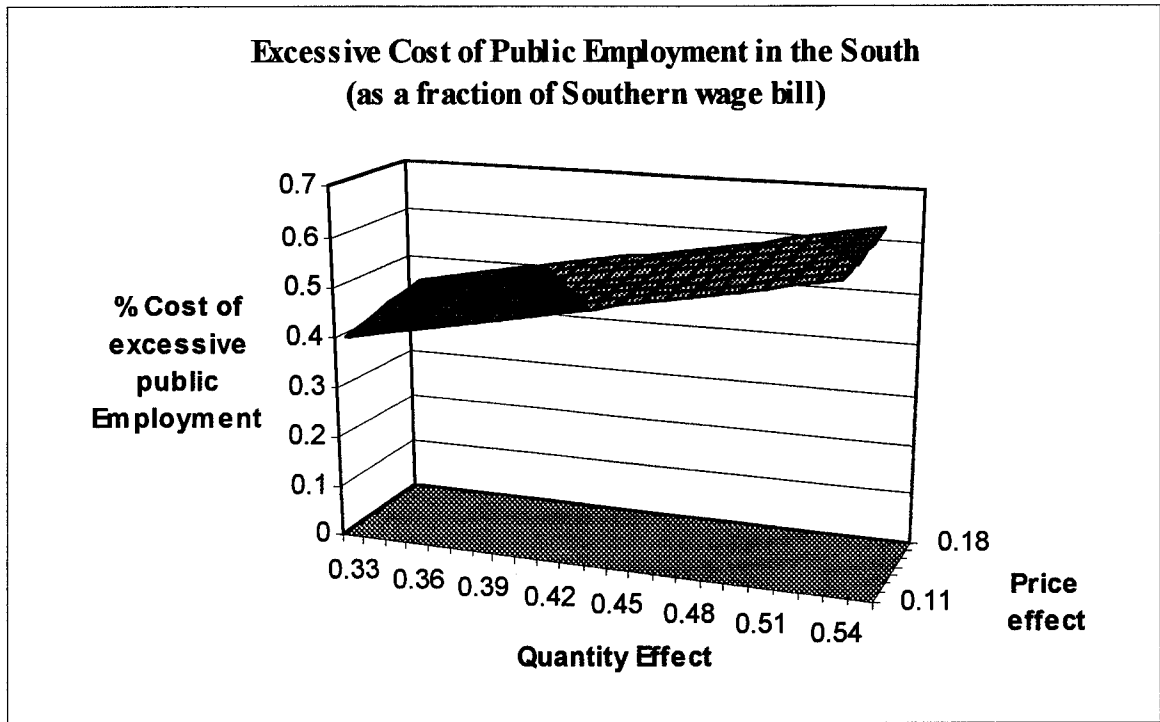


Figure 2. Feasible Range of Cost of Excessive Public Employment



REFERENCES

- Alesina A., R. Baqir, W. Easterly, 1998, "Redistributive Public Employment," NBER Working Paper No. 6746.
- Bertrand M., E. Luttmer, and S. Mullainathan, 1998, "Network Effects and Welfare Cultures," NBER Working Paper No. 6832.
- Borjas G., 1986, "The Earnings of State Government Employees in the United States," *Journal of Urban Economics*, 19 (2), March.
- Cannari L., F. Nucci, and P. Sestito, 1998, "Labor Mobility and the Cost of Housing: An Empirical Analysis for Italy," mimeo.
- Coate S. and S. Morris, 1995, "On the Form of Transfers to Special Interests," *Journal of Political Economy*, Vol. 103 .
- Danninger S. and M. Rostagno, 1999, "Does Fiscal Federalism Hurt poor Regions? A Model of Redistributive Public Employment," work in progress.
- Eberts R. and T. Gronberg, 1992, "Wagner's Hypothesis: A Local Perspective," Federal Reserve Bank of Cleveland Working Paper: 9202.
- Ehrenberg R. and J. Schwarz, 1986, "Public Sector Labor Markets," in *Handbook of Labor Economics*, ed. by Ashenfelter and Layard, Vol 2.
- Freeman B. and C. Ichniowski, 1988, *When Public Sector Workers Unionize* (Chicago: University of Chicago Press).
- Gregory R. and J. Borland, 1999, "Recent Developments in Public Sector Labor Markets," in *Handbook of Labor Economics*, ed. by O. Ashenfelter and D. Card, Vol. 3C.
- Gundloch, E., L. Wossman, and J. Gemelin, 1999, "*The Decline of Schooling Productivity in OECD Countries*," unpublished.
- ISTAT, 1996a, Italy in Figures (Rome).
- ISTAT, 1996b, Annuario Statistico Annuale (Rome).
- Katz A. and R. Krueger, 1991, "Changes in the Structure of Wages in the Public and Private Sectors," in *Research in Labor Economics*, ed. by Ehrenberg (JAI press).
- Ministero del Tesoro, 1995, 1997, Il Conte Annuale (Rome).
- OECD, 1995, *OECD Economic Surveys 1994–1995: Italy* (Paris).

Polachek S. and S. Siebert, 1993, "The Economic of Earning" (Cambridge, U.K.: Cambridge University Press).

Putnam R., 1993, *Making Democracy Work - Civic Traditions in Modern Italy* (Princeton University Press).

Raffa M. and G. Zollo, 1993, "Technical Skills and Small Innovative Firms in Northern and Southern Italy," *International Contributions to Labor Studies*, Vol. 0 (3).

Rostagno M. and F. Utili, 1997, "The Italian Social Protection System—The Poverty of Welfare, IMF Working Paper 98/74 (Washington: International Monetary Fund).