Public servants: a competitive advantage for public firms?[1]

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Abstract

In many of the deregulated markets of the EU, incumbent firms compete with new entrants. Incumbent firms may have public servants on their payroll. We investigate the cost and benefit of public servant employment, and present a simple model that shows that payroll taxes for public servants are in equilibrium smaller than the ones for workers with private employee status.

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1. Introduction

Liberalization of regulated markets has been one of the most important economic reforms of the last two decades. In almost all OECD countries, network industries such as electricity, telecom, postal services, air and rail transport, and gas have been subject to profound changes in their institutional environment. National companies were often monopolies either owned by the state or, if private, heavily regulated by state institutions. This regulation did not only affect the way companies were operating on product markets, but also their employment and human resource policies. Many firms in regulated network industries employed excess labor; deregulation has consequently often been accompanied by massive labor-shedding (cf. Kikeri and Nellis, 2002). This is true for Anglo-Saxon and continental European countries alike. The privately owned U.S. Class 1 railroads, for instance, reduced their employment since deregulation started in the early 1980s from over 450,000 to less than 200,000 (Friebel, McCullough and Padilla, 2006). The German railroads, publicly owned Deutsche Bahn, entered the phase of deregulation in 1994, and have since then reduced staff from more than 500,000 to less than 300,000.

These similarities aside, there is a major difference between continental Europe and the U.S. In the state-owned European network companies, staff is employed under specific public employment rules and employees enjoy the status of civil servant (we will also use the equivalent term public servant). While the precise conditions of employment of civil servants differ across countries, there are some general features: (i) salaries are stable and tend to be above market level at least for women and young workers, (ii) special health and pension schemes, and most importantly, (iii) job security. Many of the former national monopolies have discontinued their hiring of civil servants, but they cannot lay off the existing stock of civil servants. Hence, an important difference between the incumbent public (or formerly public) firms and their private competitors lies in the specific legal status of at least part of their staff. Those workers do enjoy specific benefits, and the provision of these benefits also has implications on the involvement of incumbent firms in the respective national social security system, comprising health, unemployment and pensions.

Competition between different types of firms should take place on a level playing field. Rather than looking at immediate distortions on the product market, we look at employment as a potential source for distortions on the product market. In liberalized product markets the incumbent firm competes with new entrants. Yet, while the incumbent firm may employ both

public servants and more recently hired employees, new entrants cannot hire anybody with the status of a civil servant. Incumbent firms thus have, on the one hand, certain obligations because they inherit staff with specific status from the past. On the other hand, they also have a potential advantage, because for their public servants they maintain their own system of benefits rather than contributing to the general social security system.

We collect the available facts about employment in public firms and suggest a framework to compare the involved costs and benefits. We also present a simple model that builds on Blanchard and Tirole (2006) and shows that payroll taxes for public servants are lower than for private status employees.

An important preliminary step concerns the source of finance to cover the costs of employment practices in the public sector. There may be situations where state funds cover these above-market price employment costs. Subsidies may come in different forms: as explicit wage subsidies, but also through pensions.[3] The fundamental question would then be whether or not the subsidies constitute state aid according to Article 87/1 of the Treaty of Rome. In particular, such subsidies constitute state aid if there is an advantage for the recipient, a distortion of competition and an effect on intra-European trade. In general, it is assumed that the last two of these conditions are satisfied when the measure is selective, that is, not granted to all firms in the sector (see Friederiszick et al, 2007). This is true by definition as private competitors cannot employ labor as public servants.

In this article we do not look at the issue of state aid; we take a different angle: does the employment of public servants provide an advantage for a public firm in a competitive market? In what follows we hence assume that the incumbent firm covers the wage costs on its own.

Section 2 presents a short overview of employment and personnel policies in public firms that compete with private firms in network markets. We consider postal services and railroads. Section 3 extends the comparison between private and public sectors by taking a broader perspective. We survey the literature about differences in unionization, employment, composition of employment, wages, pensions, work ethics and incentives.

[3] A rational worker takes pensions into account when choosing a firm, as pensions are deferred compensation. In the public sector this may be particularly important as pensions of public servants are both relatively high and safe.

Given these facts about public and private employers in the same market, Section 4 returns to the main question: how to evaluate the competitive advantage or disadvantage that civil servant workers bring to public firms. We focus on two elements of public servant employment. First, public firms inherit the job-security promise made to civil servants; private firms could promise similar job security, but their commitment remains imperfect. Hence, one could argue that public firms have an advantage. However, we make a revealed preference argument that this does not seem to be the case: public firms seem to have given up on hiring workers with public servant status during the last 10 or 15 years. Second, firms that do employ public servants usually do not contribute into the national unemployment benefits system but self-insure the employees through the job guarantee they provide or one that is given by the state in general. While the presence of public servants is a constraint to the strategy of a network operator, it is possible that it can benefit from maintaining such a self-standing system rather than having to contribute to a nationwide one. We discuss this issue in a structured way that is based on the economic rationale for society-wide unemployment insurance and on the insights from incentive theory, by extending a model proposed by Blanchard and Tirole (2006). The conclusion summarizes the arguments.

2. Public employment on competitive sectors: some case evidence

Precise information about employment of public servants in competitive sectors is hard to get. The aggregate numbers of public service employment in Europe provides an approximation for some general tendencies. Rothenbacher (2004) shows that in Belgium, France, Germany and Sweden, public service employment reached its peak in the 1970s and 1980s, and has declined since then. The only, albeit notable, exception is France where public sector employment has increased over the full period of observation. In 2000 it reached more than 20% of total employment, which is lower than in Sweden and Belgium, but higher than in Germany. In general, there is a tendency of most governments to reduce public employment because of budgetary pressure.

These aggregate figures, while instructive as an indicator for general tendencies, are however only partially relevant. Much of the public employment is in non-competitive sectors such as law and law enforcement, the army or public administration. We are however interested in knowing about the effect that the employment of people in the particular status of public servant may have on competition with private firms.

There are no comprehensive statistics on these deregulated competitive sectors, hence, case studies are the privileged source of information. We here consider postal services and rail, because they are arguably the largest sectors, both sectors have been subject to substantial deregulation and restructuring, and they are coming under competitive pressure. We have tried to gather information on the magnitude of employment reductions and the percentage of civil (public) servants.

2.1 Postal services

Atzmüller and Hermann (2004) provide some information on Austria, Germany and Sweden. In Austria, since 1996, the company has decreased employment from 35,000 to 30,000; a further reduction of 4000 posts was planned for the time between 2003 and 2006 (available data cover the time until 2002). The Austrian Post has stopped hiring staff as civil servants, all new hires are now workers or employees with a private status. Hence, the share of civil servants has fallen from 75% in 1996 to 60% in 2002. The French post office has reduced its employment of civil servants from 85% in 1997 to 72% in 2002 of total employment.[4] Since 1990, its annual hiring changed its structure: in 1990, it hired 8000 public servants and 2000 employees. Since then, the relative importance of employees has increased: in 2000, La Poste hired most of its staff as employees with a private status, and since 2003, hiring of public servants has effectively come to a halt (Figures provided by La Poste). Consequently, the share of public servants has fallen.

In Germany, employment in Postal services fell by 42% (150,000 employees) since 1990. In 2002, the German post employed 220,000 staff. The share of civil servants fell from 40% in 1997 to 33% in 2002. For Sweden, estimates of employment reduction are between 22 and 30% since the 1990s. In terms of public servants, Sweden is an outlier; in the Swedish Post the share of civil servants increased between 1995 and 2000. However, employment status is specific, because firing is usually quite difficult (mainly for economic reasons, i.e., survival of the firm).

Finally, we do have some empirical evidence on wage differentials in the postal sector according to gender and race but this reference stems from the time before the great wave of liberalization (Asher and Popkin, 1984).

[4] Full-time equivalent, http://www.senat.fr/rap/r02-344/r02-34465.html

2.2 Railroads

Railroads have gone though similarly drastic changes. The Austrian railways reduced their average employment per year in the period 1980-91 from more than 70,000 to an average yearly employment of 55,000 in the period 1992-2003. The numbers of France in the same periods are 230,000 and 180,000, Germany 520,000 to 260,000 and Sweden from 35,000 to 21,000 (all these numbers from Friebel, Ivaldi and Vibes, 2007). The only country with detailed information about the split between public servants and employees is Germany. Here, the percentage of public servants has fallen from almost 50% in 1990 to 32% in 2001.

The case of the German rail network firm DB provides some additional lessons. In particular, during the restructuring process, it was the interests of civil servants that had to be most respected. The German Constitution had to be changed in order to maintain the specific employment status of civil servants that were transferred to a special institution that sells the services of the civil servants to the DB, which is a joint stock company. Further the company created a number of internal labor market services to facilitate the intra-firm mobility into new functions, and it offers to those willing, outplacement services. Through these instruments and others like early retirement the consequences of labor restructuring have been mitigated. Naturally, all these instruments are quite costly, but a precise estimate is not available.

Trade unions in Germany have been rather willing to compromise with the management in the restructuring process. The German trade union *VerDi*, the main trade union for public services, first tried to resist the liberalization and restructuring, but then engaged in a moderate position, trying to make the transition less painful. The German railroads have a sector/firm specific trade union, *TransNet*, which seems to have been quite supportive for management strategies, but has recently grinned its teeth, when it was considered to split infrastructure from operations. Furthermore, the locomotive driver union has taken a more aggressive position in negotiations and strikes are expected.

Summarizing the scattered case evidence, it seems that restructuring goes along with a massive reduction of jobs, and a relative decline of public servants positions. The general belief is that public servants net of their costs of employment are more expensive then hiring employees with private status. Budgetary and competitive pressure seems to be the trigger for

this restructuring strategy. We have not found evidence that the hiring of public servants could be used in order to distort competition.

3. Employment and wages in the public sector – stylized facts

We know quite well about employment and wages in the public sector as a whole, but we know little about the potential differences between public administrations and public firms in competitive markets. However, it seems a reasonable assumption that wages for public sectors are similar because pay scales are usually nationwide for public servants.

We are, first, interested in the impact of the civil servant status on the structure of employment and wages. Job security is only one of the many characteristics that define a public servant. There are many others; potentially there is social status of being a public servant, and there may be intrinsic value in working for a firm that provides public goods and services. Disentangling all these effects is impossible; the literature hence rather remains at the descriptive stage of assessing what are the broad differences between public and private labor.

A second point refers to the list of labor market outcomes on which the public nature of the firm may have an impact. The literature puts forth employment level and wages but there are many other interesting outcomes (Gregory and Borland, 1999, for instance). An incomplete list of items contains the following:

- The composition of labor force by skill, gender, race and other individual characteristics. This composition can be analyzed at the recruitment stage (as a flow), or at the current stage (as a stock) which is also a result of the structure of exits.
- The wage setting and bargaining institutions like trade unions, and their relative strength.
- The structure of pension rights.
- Retraining and skill buiding on-the-job and the issue of specific and general human capital investments.
- Mobility within the public sector or firm.
- Work ethics and universal service.
- Work incentives.

The differences between private and public firms regarding the influence of trade unions needs some additional comments. The relative strength or weakness of trade unions is likely to have an impact on employment and wages. It is almost universally found that union density is larger in the public sector (Gregory and Borland, 1999, Disney and Gosling, 1998). The rationale for this is less clear. First, workers can have different tastes for union membership and this could be correlated with tastes for the public sector. Second, jobs in the public and private sector can be of different types; this could make union membership more likely in the public sector. The fact that public establishments are larger than their private counterparts might also be an explanation, given that union density is usually related to size. Third, the structure of ownership might make the interests of the owners, be it politicians or the electorate, more aligned with the interests of the workers in the public sector. Fourth, it can be owing to the different labor status: no layoffs and no bankruptcy in most of the public sector. We do not know of any detailed study trying to disentangle these different arguments.

We now review the empirical literature on employment and wages and some other points of the tentative list above.

3.1 Employment and skill composition

The literature indicates that there employment in the public sector is higher than what it would be under private management. Evidence from privatised firms supports this (see Megginson et 1994, and the previous section on postal services and railroads). Two arguments have been advanced to explain this stylized fact. First, the labor demand can shift upwards because public owners, politicians and voters, tend to favour more employment. Second, trade unions, relying on their strength in the public sector, could affect bargaining and claim higher wages and for larger employment (the so-called "efficient-bargaining" hypothesis). Recent evidence suggests that it is the first argument that seems the most relevant (Gregory and Borland, 1999).

A major difference between the private and the public sector relates to dismissal rules, dismissal costs and the probability of bankruptcy. There is overwhelming empirical evidence that the presence of dismissal costs affects the flows in and out in employment in the private sector. Even if dismissal costs are larger, the rate at which firms are shut down, called the destruction margin, is also higher. The costs of layoffs increasing, firms are more fragile or want to avoid paying these costs (Kugler and Pica, 2005).

Yet, there is a large variety of dismissal rules in the public sector across countries. Dismissal rules can be no different from what they are in the private sector as in most of the US public sector (Gregory and Borland, 1999), but also for a significant part of the public sector in Germany (Dustman and Van Soest, 1998). In other countries like France, most workers had until recently complete job security (except in case of wrongful behaviour). Yet, even if rules are different, public sector employment seems less cyclical than private employment in all countries. Because of selection effects, the composition of the labor force in terms of attachment of workers to the labor market is more controversial. Private firms in a very cyclical industry might recruit the less stable workers and layoff more. Some evidence is reported in the survey by Margolis and Fougère (1999) for the US.

A second major difference between the private and public sectors from the 1970s onwards is the composition of employment. It is consistently found that the shares of females and minorities are more important in the flow of workers becoming public servants (Gregory and Borland, 1999). One possible explanation is that recruitment depends on relative wages between the public and private sector and depends on the rate of unemployment at the moment of the recruitment as shown by Fougère and Pouget (2003). Unemployment affects females and minorities disproportionately and we will see below that wage differentials are in favour of women and minorities in the public sector. Specifically, public recruitment seems countercyclical for women (Fougère and Pouget, 2003).

Furthermore, human resource policies such as wages and promotions in the public sector have implications on the skill structure of the work force at the public utility. Exits seem to be less frequent for lower-skill groups and more generally for workers whose unemployment probability is higher. The stock of public sector employees would therefore be predominantly composed by those who exit less. This is the effect of a dynamic selection bias, a well-known composition bias in all event-duration analyses (Heckman, 1991). It also explains why the public sector tends to be composed more than proportionately by older workers in periods such as the last 15 years where recruitment is decreasing.

3.2. Wages & Discrimination

There are various econometric difficulties to measure accurately the effect on wages of working in the public sector. This is actually a reflection of the more general econometric

problem of evaluating treatment effects (Heckman, Lalonde and Smith, 1999). The treatment variable here is the presence in the public sector and the outcome is wages. One would like ideally to measure the difference in wages that every individual can receive in the public and private sectors. As the joint observation of wages in the two sectors is not possible, one needs to impose assumptions to derive estimates of the average effects of working in the public sector for those working in the public sector or the potential differences in the whole population.[5] A first step is to try to find all possible confounding factors, that is, variables that explain both the presence in the public sector and the outcomes, wages. Education age, gender and job characteristics such as occupations are high on the candidate list. One can then proceed by using matching methods. Unfortunately, one needs to write the comprehensive list of possible confounders in order to justify these methods.

If some individual unobserved heterogeneity affects at the same time the probability of working in the public sector and the difference between wages, this causes hidden bias. The most well-known situation is the Roy model where the presence in a sector is determined by the differences of wages between sectors (Heckman, 1991). All unobserved terms affecting wages are necessarily also affecting the choice between sectors. Selection correction methods are needed but they rely first and foremost on the existence of a variable which explains participation in the public sector and not the differences in wages. Such a variable is notoriously difficult to find but this is not the only remaining problem. Under general assumptions, the precision of the estimates is slightly degraded since the estimator converges at an asymptotic rate which is lower than the standard rate (Heckman, 1991).

Admitting these difficulties, empirical evidence is nevertheless quite consistent across countries. We now review results that hold observed characteristics such as education and age constant.

In the UK and France, average wages for male workers in the public sector are larger than in the private sector but this does not seem to be the case in the US (Borjas, 2002, and Rodgers, 2002) or in Germany (Dustman and van Soest, 1998). The magnitude of the differentials are of the order between 2% (France) and 5% (UK). In particular, the correction for the selection problems that we have discussed lowers the estimate of the differentials (Gregory and

[5]Even if sequential observations of public and private wages are possible if the individual enters or quits the public sector, it does not solve the problem since these individuals are a highly selected population, the selection being partly caused at least by the wage differences between sectors. Estimation and a critical argument of this procedure are developed in Disney and Gosling (1998).

Borland, 1999). Fougere and Pouget (2003) offer results in the French case, Disney and Gosling (1998) in the UK and Dustman and Van Soest (1998) for Germany. they survey and confirm these overall results in the international literature including evidence from industrializing European countries (Tansel, 1999).

What is most striking is that wage differentials for females are much more significant and of a magnitude that can attain 10 to 15%. This is also true for minorities and young workers who seem to be less discriminated against. The argument advanced is that equal pay legislation between genders and protecting the minorities might be more powerfully enforced in the public than in the private sector. A second argument is given by political economy. As most public sector workers have low skills, it is more politically rewarding to increase their wages than the high skilled wages (Miller, 1996) and show that the State is a "good" employer (Lucifora and Meurs, 2004).

The second key result is that, in all countries, the wage distribution is more compressed in the public sector than in the private sector. Disney and Gosling (1998) and Capellari (2002) offer evidence on the UK and Italy in addition to the evidence presented on France and Germany (see also Lucifora and Meurs, 2004). Lower-skilled workers receive a relative higher wage than higher skilled workers. The careful quantile estimation (albeit with no correction selection) of Disney and Gosling (1998) seem to show that it is the low intermediate skills who gain most because the very low-skilled workers are not likely to be employed by the public sector. In all these papers, the wage differential between public and private decreases the higher the position in the distribution of earnings and education. Furthermore, it also applies within a career path. Earnings are more stable in the public than in the private sector and the permanent component of income is more pronounced in the public sector (Capellari, 2002).

Besides political economy arguments that were already mentioned, there are two economic arguments explaining why wages could be different in two sectors offering different job security packages (Hübler and Hübler, 2006). On the one hand, there could be compensating differentials. Lower wages would be accepted against more job security. On the other hand, job security would improve the bargaining position of trade unions and thus job security and wages would be complements. There is no strong empirical evidence in favour of one or the other interpretation. Furthermore, differentials for men are almost inexistent which cast some doubt on both arguments.

Total compensation does not only include wages. Until now, we were discussing net wages that accrue to the workers. Limited evidence suggests that non-earnings compensation, in terms of health insurance or pension rights, is higher in the public sector because of differing payroll taxes, specifically because of pension contributions that we review below.

3.3 Pensions

Pensions can be considered as deferred earnings: rather than paying a worker a high wage today, a firm may offer high pensions. The inter-temporal structure of wages and pensions hence matters considerably for the attractiveness of public and private firms. In most cases, civil servants do not pay the same social security contributions that they would in the private sector, and their post-retirement replacement rate of earnings is larger. This may be owing to the way the life-cycle incentives are structured in the two sectors (Lazear, 1995). Dustman and van Soest (1998) show that in Germany where both civil servants and private-status workers are employed in the public sector, the net earnings over the life cycle are 13% higher for civil servants. This is mainly owing to higher pensions. Although the pension system in the UK is different (pensions are the sum of two different schemes: the basic pension rights and the additional occupation-related pensions), the same result obtains; deferred payments seem to be larger for public servants. This is also true in France where typically the replacement rate of earnings (including bonuses) is around 65% in the public sector and more around 55% in the private sector (Rothenbacher, 2004). There are also slight differences in the pensionable age but they tend to disappear over time.

3.4 Continuous training and mobility

We were not able to find any empirical evidence on differences between the public and the private sector. Empirical evidence on continuous training in some European economies (Fougère, Goux et Maurin, 2001, for France; Pischke, 2002, for Germany; Brunello, 2006 for Europe at large) points out that continuous training is mostly performed in larger firms and benefit mostly the already skilled employees and younger workers. Given that the trade-unions are stronger in the public sector and given their emphasis on continuous training (as reviewed with some controversy by Brunello, 2006), it would not seem likely that continuous training would be less common among public servants than among private workers. Some however argue that given job security, the incentives to undertake training might be less

effective (Eichhorst and Konle-Seidl, 2005). It does not mean either that training is as effective in the public sector as in the private sector. What we know from training programs is that it is most successful among intermediate and higher-skilled trainees and this explains why private training is more effective than publicly offered training schemes (Heckman, 1998).

The evidence on mobility is even scarcer. Pauron (2003) explores the mobility of workers within the French public sector. Public servants seem to be as mobile as their private sector fellows, 10% changing jobs every year. As expected, the mobility is mostly between two establishments in the public sector and not between two different administrations and public firms while the reverse is true in the private sector.

3.5 Work ethics and incentives

The threat of laying-off workers or to bankrupt the firm provides high-powered incentives in the private sector (Reboul, 2007). Yet, special features of the public sector tend to show that incentives provided in the public sector are weak (Dixit, 2002). The managers of public activities and public servants often face multiple principals (the state, the unions, the public) and multiple tasks (for instance providing a public good and complementary services as a public service). There is no convincing empirical micro-evidence that evaluates the relative efficiency of public and private workers. The difficulties to assess any differential in productivities between males and females (Hellerstein, Neumann and Troske, 1999) show that evaluating the relative efficiency of labor between two sectors is a formidable task. We were told by the management of a public firm that the lowest productivity gains were achieved in activities where there were most public servants, which is another good example of a dynamic selection bias that plagues measurement of these issues.

Management may often motivate agents in a non-monetary way. Working in the public sector would serve for some workers some idealistic or ethical purpose being at the service of the public. They may then sort themselves into different types of firms and may be motivated by the fact of working with likewise minds (see Besley and Ghatak, 2006, for an analysis of the behaviour of motivated workers).

In summary, public firms appear to be larger than they would be in the private sector; the composition of the labor force is skewed towards groups like women who suffer larger

unemployment probabilities. Wages are higher as well for women and young people in the public sector and deferred wages such as pensions are larger for all public servants. If among other characteristics, job security is the most important difference between the public and the private sector seems to have mixed consequences on the welfare of the different group of workers.

The question is now whether the public firm benefits from these differences and specifically, the ones that arise from the existence of full job security that they offer to their public servants.

4. The employment of public servants: a competitive advantage for public firms?

We have documented that employment in public firms is beneficial at least for some types of workers, those with lower skill levels, minorities and women in particular. Providing these higher benefits necessarily involves higher costs for the public firms. This is a factor that puts them at a disadvantage when competing with private firms.

But this is only part of the picture. In order to evaluate whether or not public firms have an advantage compared to their private competitors, one must also look at the potential benefits for public firms when employing public servants. The more substantial these benefits; the more it would be likely that public employment can constitute a barrier to a level playing field in the product market.

The first step of our argument is that private firms can in principle offer all the things to workers that public firms do. There is a massive literature on the so-called "internal labor markets". This literature was pioneered by Doeringer and Piore (1971) who documented that firms are treating quite differently different types of workers. While some workers enjoy job security, high and stable wages, training and career opportunities, others may be on short-term employment contracts, have variable wages, and no training and career opportunities.

Baker, Gibbs and Holmström (1994) and Lazear (1991) were the first to carry out quantitative case studies on internal labor markets; they showed that firms use predefined promotion paths and rarely fire white-collar workers and managers, similar to what public firms offer to their public servants. A number of theories have argued that through the mix of employment security, stable wages and promotion paths, firms can select and incentivize workers.

Particularly interesting are the theories of Gibbons and Waldman (1994) and Demougin and Siow (1994). The latter show that firms that use training intensive internal labor markets can coexist with firms that use more traditional labor market practices. Hence, it can well be beneficial for one firm to offer employment contracts that are quite similar to the ones that we observe in public firms, while others in the same market are not. Notice also that this literature talks mainly about the U.S. where there are taxes on layoffs (Margolis and Fougère, 2001, for a review) and therefore incentives to keep the workers in the firm. Nevertheless, many large European firms (Nokia, Bertelsmann etc) do use internal labor market policies.

Private firms can thus offer employment relations that are similar to the one that public servants enjoy. However, while the type of benefits, in particular, job security, and above-the-market-rate compensation, intensive training etc exist in private firms as well, there are two important differences between public servants and private employees, and hence between an incumbent public firm and its private competitors: first, the status of public servant is guaranteed by law and hence does not rely on the willingness of firms to keep promises made; second, public firms do not contribute to the overall unemployment insurance system of an economy.

4.1 Job security and safe wages of public servants

Private firms can only promise job security and stable wages, but they cannot exclude to renege on it in extreme circumstances. Some examples are instructive. Most famously, Lincoln Electric, has never fired any of their workers as a means to adjust to unfavourable business conditions; companies like Daimler-Chrysler or Airbus, have more or less explicitly promised similar life-long employment to their workers, but their current business condition will force them to lay off workers. Bertrand (2004) has shown quantitatively that the U.S. firms that have been exposed most to import competition have moved away from using internal labor markets. Consequently, workers in more competitive sectors are now less shielded against changes in firm environments that increase pressure on wages.

The status of public servants, however, is protected by law. They cannot be fired nor can their wages be cut, unless the law is changed. The commitment of public employers for public servants' wages and benefits is hence fully deterministic unlike the promises of private firms that may be broken. This can clearly constitute an advantage for public firms. A public firm that competes with private firms could be able to hire workers at lower wage rates, because it

offers insurance -- stable wages and safe employment. This would be tantamount to reducing wage costs because of the security that only public firms can offer.

There are however, three facts that shed doubt on this argument. The first one is that as we have documented above, public firms tend to pay higher wages, rather than lower wages (at least to some groups of workers). This is at odds with the argument that job security could be used as a way to reduce wages. Second, the people who benefit most from employment in the public sector, both in terms of wages and job safety, seem to be low-skilled men, women and minorities. If public firms were indeed to use employment of public servants to gain a competitive edge on the labor market, we would expect that it would be higher-skill groups and managers that should benefit most, because there is more competition for those groups. Indeed, private internal labor markets seem to be most beneficial for the higher echelons in the skill distribution (see Baker, Gibbs, Holmström, 1994, who have documented wages are convex in the rank within the firm). Workers that have most benefits in public employment however, are usually available at a lower market rate than the wage they receive within public firms. Third, our cases in Section 2 show that, public enterprises in liberalized markets tend to discontinue hiring public servants, and that new hires are employed according to the same rules and rationales as for private competitors. We tend to interpret this as "revealed preferences": public firms do not seem to perceive hiring public servants as a competitive measure, otherwise they would not discontinue hiring public servants unless they are forced to (which to our knowledge is not the case).

4.2 Unemployment insurance design and ways of financing it

As public servants cannot be laid off, they cannot be hit by unemployment. As there is no risk of unemployment, one could argue that public firms do not have to contribute to the unemployment insurance of an economy. But this "no-risk/no-pay" argument may be only partially right. Recall the fundamental objectives of an unemployment insurance system:

- Insurance (against temporary shocks in the firm, in the sector or in the economy)
- Assistance (to those whose productivity is temporarily or permanently impaired)
- Human capital reallocation and retraining (for those who owns outdated and degraded skills)

Insurance systems build on risk-sharing. Public firms do not share the risks of other firms in the economy. Public servants do not become unemployed, hence no private firm needs to cover their unemployment risk, but in turn, the public firm does not cover risks of the private firm either. The size of the insurance system hence shrinks when some firms do not contribute, which can lead to welfare losses. It is also the case that a self-insurance strategy is more costly and this is indeed what the public firms follow.

To describe, in a simple way, the tradeoffs between the different instruments that the State can use for employment protection and unemployment insurance, we use the model proposed by Blanchard and Tirole (2006) and we extend it in the next section, to accommodate a public firm which proposes full job security and wage bargaining. This economic model is static but it has already rich implications for discussing policies. Specifically, it enables to study the role of unemployment benefits, layoff taxes and payroll taxes which are the main instruments discussed in the debate on the design of unemployment insurance. For instance, the structure of the layoff tax rates varies a lot across US states (see Margolis and Fougère, 2001 for a review) and layoff taxes do not exist in Europe (Blanchard and Tirole, 2003).

A summary of the setting we use and the results we obtain in this model is in order before turning to the formal presentation of the model in the next subsection. We consider a public firm that operates in the same market as private firms. The public firm offers full job security to its workers. The government may decide to impose different payroll taxes on the public vs. private firms; public wages are determined by bargaining.

Our main result is that it is indeed efficient to make public and private firms pay differing payroll taxes if all other things are equal (productivity, fixed costs of entry and wages). The model shows that the difference corresponds to the earnings of those workers who would be fired by private firms but are retained by private firms. More precisely these are the workers whose productivity is below the productivity level below which private firms would layoff workers. The difference between payroll taxes thus corresponds exactly to the no risk/no pay argument.

What is interesting is that this conclusion is robust to changes in the underlying assumptions and design and levels of policy instruments. It holds if layoff taxes do not exist, as in European countries, and it holds if wages are different in the public and private sector. The difference between payroll taxes in the public and private firms is affected by distortions due

to the absence of instruments, such as layoff taxes or due to the structure of the economy (preferences, technology, ...) but these effects are shown to be of second order. The general principle still holds.

Moreover, the case where the economy is composed by various sectors adds a new dimension. The net effect then depends on the design of the unemployment insurance. If there are no layoff taxes and unemployment benefits are paid through payroll taxes as in most European countries, the net effect depends on whether the public firm is in a sector where employment declines or is in expansion. In the latter case, most firms in such a sector do not lay off and the private sector firms are therefore net contributors to the system. In the case where employment in the sector is decreasing, private firms benefit from the unemployment insurance way of financing. Remark that public firms are neutral, it is their relative position vis à vis the private sector which is affected.

There is no role for assistance and retraining in this static model. Hence, a brief discussion of these issues is necessary. First, both assistance and retraining have a public good aspect according as what society decides. Specifically, assistance would then be financed by payroll taxes and it does not differentially affect the private and public firms. Retraining in its public good dimension is not different from standard education. All firms benefit equally from education provided by the State and there is no reason to treat public and private firms differently with respect to financing the retraining of unemployed workers. Yet, note that if unemployment insurance allows workers to wait and find a better match on the labor market, the public firm could benefit from this. This is however a second order effect as unemployment exits are weakly affected by incentives (Atkinson, 1987).

4.3 An economic model on unemployment and the interaction of public and private firms

Assume first that there is a given total population of workers. A proportion p is working as public servants in the public firm, occupying p positions. There is full job security in the public firm and these workers are never laid off. A mass $1-p$ of workers are not employed but will be recruited by the private firms in equilibrium. Parameter p is neither an endogenous variable nor a parameter controlled by the State. It indexes the weight of the public firm in this particular market. It is given ex-ante and likely results from the past level of public employment.

At the beginning of the period, private firms can enter by incurring a fixed cost I and employ one worker. The public firm pays the same recurring cost for each worker. Second, after their entry in the market, private firms offer a wage w to workers, and workers accept or refuse these offers. As a result of a simple arbitrage, all workers are recruited in equilibrium. In contrast, public workers and the public firm bargain, at the same time, over the public wage, w_p . Rents are equally shared between workers and the public firm whose transfers to the State are denoted τ_p . These transfers include all profits of the public firm that accrue to the State as the owner of the public firm and they also include payroll taxes so that the transfers are net flows from the public firm to the State.

After wages are determined, a productivity shock y in all firms and positions is realized. This may reflect realizations of demand, innovations etc. The shock varies between 0 and 1 and is independently distributed across positions. It has distribution function G in the private sector. This distribution function is translated by a factor Δ_y to obtain the distribution function in the public sector G_p i.e :

$$\Pr(y \leq y_0 \mid Public) = G_p(y_0) = G(y_0 + \Delta_y).$$

Finally, after the realization of the shock, private sector workers are either laid off and are paid unemployment benefits μ or workers remain employed and produce y at wage w . In case of layoff, firms pay a layoff rate f. Payroll taxes are equal to τ for private firms.

Firms are risk neutral and workers have utility $U(.)$. The disutility of working is b in monetary terms. The welfare function of the State is utilitarian with some relative weight given to the workers of the public sector. It is equal to the sum of the utility of workers in the private sector multiplied by their mass $1-p$ and of the utility of workers in the public firm multiplied by their mass p and by a parameter λ that might reflect the larger political weight of these workers (Gregory and Borland, 1999).

We start with the case of "first best" where the government can use all the instruments (τ, τ_p, f, μ) and where public and private workers have the same welfare weight ($\lambda = 1$). We then turn to study various extensions. Specifically, we would analyze situations where welfare

weights for the public and private workers differ ($\lambda \neq 1$) and where the layoff tax f is not an instrument, in order to reflect the situation in most European countries where no layoff taxes exist.

4.3.1 *First-best solution when public and private workers are equally considered*

We start with the case where $\lambda = 1$. The Government's optimization problem is to maximise the welfare function composed by three terms: the welfare of unemployed, the welfare of employed workers in the private sector and the welfare of public sector workers.

$$\max_{\{\tau,\tau_p,f,\mu,\bar{y},w,w_p\}} (1-p)\{G(\bar{y})U(b+\mu) + (1-G(\bar{y}))U(w)\} + p.U(w_p)$$

It is subject to the free-entry condition for private firms:

$$-G(\bar{y})f + \int_{\bar{y}}^{1}(y-w-\tau)dG(y) = I,$$

the government budget constraint:

$$-(1-p)G(\bar{y})(\mu-f) + (1-p)(1-G(\bar{y})).\tau + p.\tau_p = 0,$$

the bargaining agreement in the public sector between management and workers:

$$(\int_{0}^{1}(y+\Delta_y)dG(y) - I) = w_p + \tau_p, \qquad (1)$$

and the threshold productivity condition in the private sector:

$$\bar{y} = w + \tau - f.$$

Solving this program as Blanchard and Tirole (2006) do, implies that:

- The government fully insures workers against risk and status:

$$w = b + \mu = w_p$$

- The production has efficient level:

$$\bar{y} = b$$

- Payroll taxes are larger in the private sector if expected productivities are equal ($\Delta_y = 0$):

$$\tau_p - \tau = \Delta_y + \int_{0}^{\bar{y}}(y-\bar{y})dG(y) < \Delta_y. \qquad (2)$$

The two first conditions are derived as in the first best of Blanchard and Tirole (2006). The

last condition comes from substracting the free-entry condition for private firms and the rent-sharing agreement in the public sector. The inequality condition uses that the second term on the right-hand side is always negative.

Our leading case is when there is no prior evidence of differences in the distribution function of productivities in the public and private sectors ($\Delta_y = 0$). Equation (2) establishes that taxes are lower in the public sector. Lower taxes partly compensate for the costs associated with the lowest part of the productivity distribution of positions that are producing in the public sector while they would not if they were made private. Indeed, the term in the integral is exactly the loss that the public firm incurs because it employs and pays workers under their value of leisure ($\bar{y} = b$) while private firms would lay off these workers.

Some simple remarks to show that this result is robust to various changes in the assumptions: First the solution is not the first best in the public sector since some workers work with a productivity which is lower than their disutility of working, b . They hence destroy value and it would be optimal to temporarily layoff these workers and pay them full income discounted by the monetary equivalent of leisure, b , but we excluded this case by assumption. Second, remark that our conclusion extends to the case where the two distributions differ not only by a translation Δ_y of productivities but by more general features. It indeed suffices to redefine Δ_y as the difference between the expected ex-ante productivities between the public and private sectors and the same conclusions hold true if Δ_y=0. Furthermore, it is also robust to introducing differences in the recurring costs I of establishing positions provided that we redefine Δ_y so as to include these differences. Finally, the rule for rent sharing in the public sector can be different from equal sharing. The rent sharing equation (1) determines net transfers from the public firm to the State (τ_p) while the public wage is given by the arbitrage condition in the labor market ($w_p = w$).

4.3.2 Extensions

We can readily introduce a relative larger weight for the public workers $(\lambda > 1)$. The optimality condition now requires:

$$U'(w) = \lambda U'(w_p)$$

so that:

$$w_p = w + (\lambda - 1).\Delta_w$$

where $\Delta_w > 0$. Public wage w_p is larger if $\lambda > 1$ and this might rationalize why low-skilled workers in the public sector are better paid than their fellow workers in the private sector.

This change affects the difference between payroll taxes in the public and private sectors as given by equation (2) so that we now have:

$$\tau_p - \tau = \Delta_y + \int_0^{\bar{y}} (y - \bar{y}) dG(y) - (\lambda - 1)\Delta_w.$$

The conclusions of the previous section are modified accordingly but broadly apply. Payroll taxes and profits (τ_p) should be lower in the public sector because (1) public employment is completely protected (2) the public wage is higher than the private wage. The difference in payroll taxes implied by conclusion (1) does not depend on auxiliary assumptions about the mode of determination of public and private wages which is ultimately a political decision in this model if $\lambda \neq 1$.

Second, note that this condition on the difference between payroll taxes in the public and private sector does not depend on the existence of layoff taxes. If this instrument does not exist, it will distort the decisions of production in the private sector but it would not change the difference between payroll taxes in the public and private sector. This conclusion generally applies to any causes of distortion in the private sector as studied by Blanchard and Tirole (2006): limits on insurance due to a significant utility loss due to unemployment (social self-value, stigma etc) or limited liability for private firms; limits on layoff taxes; ex-post wage bargaining and ex-ante heterogeneity of firms or workers. The only difference with the first-best case comes through the influence of these distortions through the layoff threshold.

5. Concluding remarks

We have investigated the situation in which public and private firms compete in the same product market in which competition is fair, and the quality and efficiency of employment stocks in both firms are not different. The two firms only differ in the fact that public servants are employed by the public firm, so that this firm offers job security and does not pay any

payroll tax for unemployment risk. In this setting wages can actually be different for reasons that have nothing to do with the actual competition between firms in the product or labor markets.

We have documented that employment in public firm is better for those workers who are less demanded by the labor market. This increases the cost of public firms. We have also presented some evidence that public firms who are competing with private firms try to reduce the share of their workforce who has public servant status. By a revealed preferences argument, public firms seem to gain not much of a competitive advantage from public servants. Otherwise, they would not discontinue hiring of public servants unless forced to.

Secondly we show in a simple model that non-payment of unemployment payroll tax is justified by the fact that the public firm self-insures their workers against unemployment. As self-insurance is generally more costly than general insurance, this cannot be taken as giving a competitive advantage to the public firm. Overall, there hence does not seem compelling reasons that competition is distorted if public firms maintain public servant employment for a transitory period.

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