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The Impact of Privatisation on Wages: Evidence from the Portuguese Banking Industry*

Natália Pimenta Monteiro†

Abstract

We present quasi-experimental estimates of the effect of privatisation on wages in the Portuguese banking sector for the period 1989-97. The design of the reform and the nature of dataset employed provide an important opportunity to analyse the effects of privatisation on different demographic groups, using multiple control groups, and taking into consideration the timing of the effects. We find a *positive* relationship between time of restructuring and wage variation regardless the choice of the control group. Retained employees in privatised firms did experience lower wage growth rates, but *only* during the first two years after the ownership change. Estimates for top managers appear to contradict the theoretical predictions.

Keywords: privatisation, wages, Portuguese banking industry, difference-in-differences.

Jel classification: J31, J45, L33.

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1 Introduction

The impact of privatisation on labour market outcomes is potentially substantial. On the one hand, public sector industrial relations are to some extent separate from private sector ones and have specific features. For instance, public sector organisations tend to pursue a multiplicity of often conflicting objectives whereas private sector firms can focus more narrowly on generating profits. In addition, public pay determination tends to respond to political pressures rather than to markets or firm performance. In the past, public union leaders have often been able to gain advantages by exploiting public corporation managers contacts with politicians and members of government, in a near or total monopoly bargaining position. On the other hand, much of the debate about the desirability of privatisation has included labour market outcomes - employment and pay levels. In contrast to trade unions, the proponents of privatisation hope that privatisation restructuring will reduce over-manning and excessive pay levels and benefits.

However, many of the studies of privatisation to date have focused on processes and institutions. In fact, most of the work has actually been concerned with whether or not the transfer of ownership from public to private sector leads to an improvement in corporate performance.[1] Important distinctions between cost/defensive and revenue/strategic restructuring have been observed by Grosfeld and Roland (1997) but the exact channels through which the expected efficiency improvements of the firm occur are still not known.

[1] The research on this topic is voluminous, see for instance, the survey by Megginson and Netter (2001).

Research focusing on the effects of privatisation on labour market outcomes (both theoretical and empirical) is, in general, scarce, inconclusive and almost exclusively confined to the United Kingdom experience.[2] One exception is the (empirical) effect on the total level of employment of the firm, which is often examined in the industrial literature as an extra firm performance indicator. In respect to the impact of privatisation on wages (both employee pay and non-pecuniary benefits) there is no systematic exploration in the literature. But the scarce empirical evidence presented so far, refutes the effects that are traditionally predicted: pay levels are relatively inflexible and tend to increase above-average after privatisation (Pendleton, 1997).

This study looks at the effects of privatisation on wages in Portugal where public ownership was widespread.[3] More specifically, the effects of direct transfer of ownership from public to private sector, are examined in a single sector: the Portuguese banking industry.[4] A number of different arguments form the basis of this industry selection. First, until the mid-1990s, the privatisation programme was asymmetric and biased sectorially. Its major incidence, in terms of number of firms comprised or in terms of volume of revenues generated, was in the banking industry (Ministério das Finanças, 1999, page 15). The privatisation comprised eleven companies, which accounted for more than 83% of banking employment in 1985, and raised about 3,3 billions of EUROS, the bulk (48%) of the total sales of state

[2] In contrast, the effect of market's deregulation, a related policy, has deserved a relatively remarkable attention in the labour literature, although mainly reflecting US experience. For a recent survey, see Peoples (1998).

[3] Portugal is classified as the third largest privatiser in the OECD countries, after the New Zealand and the United Kingdom (OECD, 1998).

[4] Although there are different forms of privatisation, this study only focuses on the effects of sales of public companies on wages.

enterprises until the second quarter of 1995. Moreover, in contrast to some other economic sectors, where privatisation is less advanced and still ongoing, privatisation of the entire banking industry was started and completed between 1989 and 1996. In addition, the developments of the Portuguese financial sector, privatisation and deregulation, are considered a remarkable success: "the main reform objectives were met"' without "the concomitant financial instability experienced by many other OECD countries" (OECD, 1999, p. 94).

Second, the design of the privatisation programme and the structure of the banking sector provide a notable and promising opportunity to evaluate the economic effects of a change in ownership. Indeed, in contrast with the remaining industries, the privatisation in the financial sector did not affect all public firms. There still continues to be a large state-owned financial group, which provide us with a valuable natural candidate as a control group to examine the effects of the reform. Moreover, the Portuguese banking industry structure is diverse, as will be described below, allowing a variety of possible ways of defining a control group, and therefore provides multiple and fruitful comparisons.

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Finally, although there is little research focusing on the banking labour market, prior research provides evidence of rent-sharing behaviour in the industry, which potentially raises the privatisation effect. The structure and the industrial relations in the banking industry - namely role of unions, level and trend of unionisation density, wage bargaining mechanisms, firms size and ownership structure- contrasts sharply with those prevailing in the remaining sectors. Given these dissimilarities, the effects of privatisation are likely to differ across industries. Comparison of the effects of privatisation in different sectors is beyond the scope of this study.

This study uses individual-level data from a particularly appropriate dataset collected annually by the Portuguese Ministry for Social Security and Labour, *Quadros de Pessoal*, to evaluate the impact of privatisation on the wages of workers whose firms were transferred from the state to the private sector. The longitudinal nature of the dataset allows us to build a panel dataset covering a period before and after the reform and a difference-in-differences estimator is adopted to infer the impacts of the policy reform.

This paper is structured as follows. Next Section 2 reviews the theoretical predictions concerning the impact of privatisation on wages and critically evaluates prior evidence. It also includes related literature such as wage differentials in public and private sectors with particular reference to Portuguese industrial sectors. Section 3 discusses the main features of the privatisation programme and the labour relations prevailing in the banking sector. Section 4 describes the methodology employed to evaluate the effects of the policy reform. The empirical implementation and evidence are outlined in Section 5. Section 6 offers some concluding remarks.

2 Privatisation and wages: theory and previous evidence

The theoretical literature on the impact of privatisation on wages, although fairly limited, is not consensual. Haskel and Szymansky (1992, 1993) develop the first model, which is an integration of the standard bargaining approach (right-to-manage) and the regulation/privatisation literature, to provide the usual predictions about the effects of the transfer of ownership. Wages are likely to decline as the movement from public to private sector involves a shift in the public firms' objective function towards profit maximisation and a reduction in the union bargaining power. Therefore, a convergence of pay levels between privatised and other private firms is expected to occur. This finding confirms the prediction made from the well established public/private wage differential literature: if on average, workers with similar attributes are better paid in the public than in the private sector, then privatisation will put the former in a worse position.[5]

In contrast, the predictions which emerge from the subsequent work are ambiguous. Haskel and Sanchis (1995) extend the previous analysis by including workers' effort in the bargaining process. If privatisation raises effort, firms may be willing to settle for higher wages, depending on trade union preferences. Similarly, De Fraja (1993) using a model, where a firm is privatised into a market of Cournot players, suggests the same result: wages in the privatised firm may go up (down), according to the lower (higher) degree of market competition, whereas the other firm's wage increases as a consequence of its rival's privatisation. Finally, Goerke (1998) employing a slightly different framework, a shirking model of

[5]However, in economies in transition and also in our case, the wage premium tends to be in favour of private workers. As Blanchard (1997) highlights, it reflects the apparent willingness of state to trade-off wages for (higher) employment.

efficiency wages, obtains again unclear predictions. Privatisation may raise or lower wages depending on how it is modelled (as a stricter control or stronger profit orientation) and on the wage setting mechanisms.

Apart from these models, which look at the effects on the overall wage distribution, there is a vast growing literature concerning the conditions that affect the remuneration of one specific occupation: top or chief executive managers.[6] According to this line of reasoning, the compensation of top managers/executives tends to rise after privatisation as pay scale constraints are released, executives are more explicitly linked to observable measures of firm performance and have more bargaining power. In addition, if privatisation is associated with an increase in the firm scale, managers have direct oversight of more activities, and hence may expect a higher remuneration.

The empirical evidence concerning the effects of privatisation on wages does not generally reflect the diversity of results predicted by the theory. In fact, the work by Bishop and Kay (1988), Haskel and Szymansky (1993) and Parker and Martin (1996) with reference to the United Kingdom, the work present by La Porta and Silanes (1999) relating to the Mexican economy and the recent works by Brainerd (2002), Ho *et al.* (2002) regarding privatisation in Russia and China, show an unanimous pattern. Average real wage in privatised firms tends to rise after the introduction of the reform, whenever it is related to that of the private or public sector or the whole economy.

This striking finding should nevertheless be treated with some caution for different reasons. First, excluding the most recent two works, previous research use data collected from

[6] See, for example, Rosen (1992) for both theoretical and empirical survey.

company accounts. Thus, an increase in the average wage (calculated as wage costs divided by the total level of employment) over time, can be distorted by changes in the hours worked or changes in the composition and attributes of the workforce. For instance, if firms disproportionately fire low wage workers after privatisation, then the average wage may rise. Moreover, even if workforce composition remains constant, the wage increase might reflect wage increases in narrow and specific occupations such as top or executive managers. Second, the monopolistic position of many of the privatised firms studied, makes it impossible to compare them with similar industry-matched firms. Therefore, the comparison with the whole economy may not allow us to isolate privatisation effects from other specific industry factors (only from the macro business cycle). As Parker and Martin (1996) refer "*each privatised company has its own particular performance determined by the environment in which it operates*". Finally, in all but Parker and Martin's (1996) work, the time dimension of the restructuring process has been largely neglected. As Gupta *et al.* (2001) discuss, a full evaluation of the effects of privatisation requires an examination of the desired labour outcomes throughout three periods: the pre-privatisation period, the privatisation period and the post-privatisation period. For instance, privatisation may lead initially to pay cuts, even before the actual transfer of the ownership, which may be reversed if the firm grows or gains from future share appreciation.

The empirical literature on the executive labour market corroborates the predictions suggested by the theory. Even though the main focus of this strand relies on finding which is the best explanation, among competing theories, to account for changes in executive remuneration, all research seems to confirm a significant increase in the wage level of executive

managers after privatisation. For instance, Wolfram (1998) reports a wage increase of 200% for the chief executive officers after privatisation of British electricity industry. The same conclusion is obtained when a broader concept of executives is used. For instance, Bishop and Kay (1988) detect an increase of 173%, 79% and 81% in the director remuneration in 12 privatised, 5 public and a sample of leading private firms, respectively, while La Porta and Silanes (1999) report a relative wage increase of 47% for white collar employees.

There is little research explicitly concerned with the Portuguese banking labour market. Vieira *et al.* (1997) and Kiker and Santos (1991) attest a significant but unstable wage premium to banking workers relative to the average paid by other industries. Apart from this, there is further, but indirect, evidence of rent-sharing behaviour in the banking industry. While Portugal and Centeno (2001) find that the public/private wage differential in Portugal is the widest within European countries, Vieira *et al.* (1997) points out a significant wage premium to large firms and for workers covered by decentralised collective bargaining agreements - these are two important features of banking industry as will be discussed in the following section.

3 Privatisation and the banking labour market

The privatisation programme was introduced in the banking sector, as a further step in the successful reform of the Portuguese financial system (OECD, 1999). This structural reform, starting in 1984, aimed to put an end to the heavily regulated and nationalised system imposed in the industry after the 25th April 1974 revolution. Less than one decade afterwards, when most of the deregulation reforms were already accomplished, including the

openness of the financial intermediation to the private sector and the dismantlement of the interest rate controls, the privatisation programme was then implemented.

The first privatisation law adopted in 1988 (law 84/88 from 20th July) allowed merely *partial* privatisation of public enterprises as the State still retained 51 per cent of the equity. For this first phase of privatisation, the government selected four profitable firms, which included one medium size bank. In April 1990, after a second Constitutional Amendment laid down in June 1989, the *lei Quadro das Privatizações,* (decree-law 11/90 from 5thApril) was passed allowing full privatisation of enterprises nationalised after 1974. The privatisation programme was assumed to be an important mechanism for (1) improving the deteriorated performance of public economic units, (2) modernising and increasing their competitiveness and (3) widening the participation of Portuguese citizens in the ownership of enterprises, particularly among workers and small shareholders.[7]

The firms being privatised were first transformed into corporations, with a prior evaluation being made by two independent entities. But in contrast with some other economic sectors, (for instance, electricity and telecommunications) the government opted for a policy of no interfering in the public firms during the period before privatisation (Naumann, 1995 and Sousa and Cruz, 1995), leaving the economic restructuring for future private owners. In terms of scheduled order of privatisation, apart from those firms which were selected on grounds of performance indicators for the partial privatisation phase (OECD, 1989), there was no firm schedule for subsequent firms' privatisation (OECD, 1991). Instead, the timetable was strongly affected by the economic and political domestic cycles' and by the

[7]Sousa and Cruz (1995) describe and discuss the economic and financial situation of public enterprises.

international context.

By mid-1997, ten out of twelve public banks became fully private: two banks were privatised in 1991, three in 1994, and each of the five remaining banks were privatised in 1989, 1990, 1992, 1993 and 1996, respectively.[8,9] The most common privatisation procedure used, was public offer, and to a much less extent, direct sale or public tender. The broadening share-ownership goal clearly desired by the authorities was not achieved, instead a managerial dominant type of ownership emerged (although the employees had the right to subscribe to some part of the capital of the privatised firm at preferential rates). In most cases, ownership returned to former Portuguese groups, which owned them prior to the nationalisation wave in 1974.[10] Due to this *private-public-private* ownership path, privatisation in Portugal is termed *re-privatisation*.

As a result of the divestiture reform, significant improvements in terms of productivity and efficiency levels were registered in the Portuguese banking industry. For instance, the OECD 1999 survey, referring to the commercial banking industry, reports a continuous increase in the productivity level (balance sheet total per employee), which allowed not only a reduction in operate/staff costs (from 1.53 per cent of average assets in 1991 to 0.98 percent in 1997) but also a remarkable improvement in the profitability rate (return to equity) after 1995. This global rise in the efficiency level of the industry is also confirmed by

[8] This total number (ten) of firms privatised in the banking industry does not coincide with the eleven firms privatised reported by the OECD 1999 survey. This discrepancy is due to both the absence of one bank in the data; the exclusion of one bank, whose privatisation implied the transfer of a minority participation (15%) to the private sector and the inclusion of the indirect privatisation of a public bank through the privatisation of the group to which it belongs (see page 22, Ministério das Finanças, 1999).

[9] According to the privatisation literature, the first sale of tranches of shares in each firm dates the effective privatisation.

[10] International investors could buy a limited share of the equity ranging from two to forty percent of sales.

Pinho (1999), who nevertheless attests to an increase particularly *more* pronounced *among* privatised institutions.

Table 1 exhibits the major trends, in terms of labour outcomes, that occurred during the implementation of the privatisation programme. For comparison purposes, the public category refers to the 2 permanent public banks whereas the privatised category includes the 10 firms being privatised. National and foreign categories include, respectively, private domestic and foreign owned-firms.[11]

In contrast with public (national and foreign) firms whose level of employment remained fairly constant (increased) from 1991 on, the level of employment in privatised firms dropped steadily during the reform period.[12] Each privatised firm lost on average 732 employees between 1989 and 1997 (implying a 23 per cent (3884/3152) rate of overstaffing), which corresponds to a loss of 92 employees per firm/year during the same period. This is further confirmed by the increasing number of workers, particularly women, declared unemployed from the financial industry over the referred period despite the absence of any failure or closing institution. Nevertheless, in terms of job security, at least when measured by the share of permanent full time workers, there was no deterioration in privatised firms once this proportion increased during the entire period of analysis.[13]

The trend in workers' wage is also clear: all banking employees experienced a strong

[11] The number of national (foreign) owned firms is 6 (8), 6 (11), 9 (15), 15 (14) and 19 (15) in 1989, 1991, 1993, 1995 and 1997, respectively.

[12] The entry of new small domestic firms in the market in 1995 and 1997 explains the decline in the average size of national firms.

[13] In some cases, the corporate economic restructuring involves the adoption of less secure job (human resource) practices, including either temporary or partial employment, in order to achieve more *flexible* industrial relations. Cam (1999), for example, reports significant jumps in the number of temporary posts in the Turkish cement industry.

(real) wage rise, mainly reflecting the fast economic growth observed in the economy, after Portuguese membership of the European Community in 1986. For privatised firms' workers however, the wage increase, confirming prior research, is clearly more pronounced than in any other ownership category. Between 1989 and 1997, privatised employees enjoyed a wage increase of 33 percent whilst public, but in particular, national and foreign employees enjoyed a much modest wage gain of 27, 19 and 14 percent, respectively. This convergence in payment level is particularly notable as important dissimilarities in terms of human capital attainments became more evident among the four ownership categories (Table 2). Employees in privatised firms, even after the reform, are the least educated, the oldest and the most experienced in the banking sector. Finally, notice that this simple analysis besides not accounting for changes in the workforce composition, ignores the time elapsed since the introduction of the reform in each firm, which possibly mitigates dynamic privatisation effects.

In general, the new firm's profit orientation is likely to exert a downward pressure on wages and hence, erode the existent worker rents (Vieira *et al.*, 1997) owed to regulation/nationalisation waves. Nevertheless, the scope for this wage erosion is limited, as unions in the banking industry represent *all* of the workforce in the wage bargaining process, *regardless of the ownership* of the bank. Moreover, the union bargaining position in the industry (historically the largest and most influential in the country) has been reinforced over the course of reforms, in contrast with other sectors in the UK and USA, which were exposed to similar market oriented policies (privatisation/deregulation).[14] Indeed, the union par-

[14] Peoples (1998) reports a decline in the unionisation density after liberalisation of either trucking, telecom-

ticipation rate in the banking sector has expanded markedly between the period 1974-78 and 1991-95, from 71% to 106% (Cerdeira, 1997). *A priori,* the decentralised bargaining system should bring uniform wage levels across firms within the banking sector, although the positive differential between negotiated and effective wage levels has widened since the early nineties (Aperta *et al.*, 1994).

4 Econometric considerations

This study estimates the impact of privatisation on wages of workers, whose firm's ownership was transferred from state to private hands. In particular, for those affected by the reform, the main question is: what would their wage have been if the privatisation programme had not been introduced? The design of the policy reform described in Section 3 makes the difference-in-differences approach a natural one to take. This approach considers the privatisation reform itself an experiment, *the treatment,* and tries to find a naturally occurring *comparison* group that could reflect the properties of a control group in a properly designed randomised social experiment. The average effect of the reform on the individuals whose firms were privatised, also referred to as the *effect of the treatment on treated,* is recovered by comparing the difference in average behaviour before and after the reform for the *treated* with the before and after behaviour of the *comparison* or *control* group. Thus, the selection of the comparison or control group becomes a central part of this evaluation procedure.

To be more precise, let us state formally this evaluation procedure. Let W_{i1} and W_{i0} represent the logarithm of wage paid to an individual i conditional on the presence and

munications or airlines industry in the USA. This result is also found in developing countries, for instance in Turkey de-unionisation also accompanied privatisation reform (Cam, 1999).

absence of *treatment* (privatisation), respectively. D_i is a participation variable that identifies whether the employee i received treatment, *i.e.* was employed in a firm that was privatised, $(D_i = 1)$ or not $(D_i = 0)$. Thus, the impact for the $i-th$ individual of the policy is given by $W_{i1} - W_{i0}$ and the average privatisation effect for those individuals whose firms' ownership was transferred from state to private hands is our main question, $E(W_{i1} - W_{i0}|D_i = 1)$. Clearly, the evaluation problem in observational studies can be regarded as a missing data problem since we can not estimate $E(W_{i0}|D_i = 1)$ directly. Suppose that $t = 0$ and $t = 1$ represent respectively the period before and after the implementation of the reform. The key identifying assumption of the simple difference-in-differences estimator consists of

$$E(W_{i0}|D_i = 1, t = 1) - E(W_{i0}|D_i = 1, t = 0) = E(W_{i0}|D_i = 0, t = 1) - E(W_{i0}|D_i = 0, t = 0). \tag{1}$$

This assumption implies that if the privatisation reform had not taken place, the wage growth in privatised firms would have been the same as in other firms that belong to the control group. Equivalently, differences in the wage level, between the two firms' groups, remain unchanged in each time period. Therefore, the missing counterfactual, under assumption (1), can be replaced by the sum of two terms,

$$E(W_{i0}|D_i = 1, t = 1) = E(W_{i0}|D_i = 1, t = 0) + [E(W_{i0}|D_i = 0, t = 1) - E(W_{i0}|D_i = 0, t = 0)].$$

The first known right hand-side term corresponds simply to the wage level prevailing in state firms that were to become private, before the introduction of the privatisation programme.

The second term adjusts this wage level by the observed wage growth in the control firm group. Under assumption (1), the difference-in-differences estimator may be obtained by differencing wage levels across the treated and control groups and across the two time periods,

The simple (or raw) difference-in-differences estimator obtained by double differencing sample means, may also be produced by running a regression using micro data pooled across (treated and control) groups and (before and after) time periods with additive group and time indicators plus an interaction term between these two indicators.

$$W_{it} = \beta_0 + \beta_1 D_i + \beta_2 A_t + \theta D_i * A_t + \varepsilon_{it} \tag{2}$$

In this specification, the variables W_{it} and D_i refer to the wage level and to the treatment indicator as defined previously, while A_t is a set of time dummies that indicate for each individual the period after ($A_t = 1$) and before ($A_t = 0$) the implementation of the reform. In this model, both treated and control groups are identified by one single dummy variable. When there is more than one control group, it is also required additional dummy variables to identify each group and its interaction with time period dummies.

Finally, this simple difference-in-differences estimator may also be extended (by adding a vector of individual and firm characteristics) in order to control for differences in observable (individual and firm) attributes between the two groups, not absorbed by the additive group and time effects. For this purpose, we add an extra subscript j to identify and isolate firm from employee effects. The "adjusted" difference-in-differences estimator is obtained by

running a regression of the form,

$$W_{ijt} = \beta_0 + \beta_1 D_i + \beta_2 A_t + \theta D_i * A_t + \phi_1 \mathbf{X}_{ijt} D_i + \phi_2 \mathbf{X}_{ijt}(1 - D_i) + \alpha_i + \gamma_j + \varepsilon_{ijt} \qquad (3)$$

where the treatment and control group's observable characteristics, $\mathbf{X}_{ijt}$, are allowed to have different effects on the outcome (i.e. $\phi_1$may differ from ϕ_2). The unobservable term is specified to be $\alpha_i + \gamma_j + \varepsilon_{ijt}$, where the term α_i captures the effects of unobserved time-invariant person characteristics, γ_j refers to the unobserved time invariant firm effect and ε_{ijt} is assumed to be a white noise term. The estimator of policy incidence on the treatment group, θ, corresponds to the difference-in-differences estimator and indicates the (percentage) variation in the wage differential between the treated and control groups during the period considered. This effect here is termed as *privatisation* or *ownership* effect.

Under this setup, it is clear how critical the assumption (1) of the difference-in-differences approach is. It relies on two requirements: common macro effects across groups and no compositional changes within (treated or control) groups. Common macro effects may be violated if treatment and control groups react differently to macro shocks. Because our treatment and control groups (clarified in detail in the following section) belong to the same industry, where shocks are instantaneously transmitted trough (variations in) interest spreads to the whole market, this assumption is likely to be fulfilled. The adoption of a universal banking model in 1986-1987, suppressing prior market specialisation and segmentation, further enhances this common macro effect, once it potentially uniforms the portfolio of customers (households and firms) amongst the banks. Also important, since unions represent *all* em-

ployees, regardless of the bank ownership, in the wage bargaining process, macro effects exert common wage pressures amongst the banks.

The requirement of no compositional effects within treatment and control groups is much more difficult to meet. Table 1 and Table 2 may suggest that the composition of the treated and control groups evolved in a nonrandom way in response to the reform. New firms, either domestic or foreign, entered in the market with different sizes and profiles in terms of human capital attainment or gender composition. On the other hand, the introduction of the reform affected the composition of the firms being privatised. Figures in Table 2 imply a selection process driven by, either the privatised firms themselves or by individual own self-sorting, which led to smaller banks, with a lower education and higher age level.

A final problem in this evaluation regards the potential endogeneity of the ownership change. The *lei Quadro das Privatizações* mentions no *explicit* goal concerning labour market outcomes, but firms were selected based on performance indicators during the first phase of (partial) privatisation. During the remaining phases, however, there was no firm schedule and the implementation of the reform was more conditioned by the domestic economic cycle and international context. Even if important, the potential endogeneity can not be addressed properly, given the missing firm's key variables in the dataset, namely total sales and social capital, for the period and industry covered.

5 Empirical implementation and results

The difference-in-differences estimator laid out above is implemented using individual-level data from the dataset, *Quadros de Pessoal* collected by the Portuguese Ministry of Labour

and Solidarity. This is an extensive database of matched employer-employee information based upon mandatory employer reports. It provides detailed information about each unit, firm or employee, observed. For instance, information about location, total level of employment, economic activity, type of management, total sales and social capital is available for each firm. For each employee, gender, date of birth, level of schooling, occupation, full-time/part-time status, earnings, duration of work and the mechanism of wage bargaining are known, as well as the location and industry of the employing firm.

Before describing the strategy used in this study for creating the data sample and the variables, let us state precisely the treatment effect we is interested in, which will condition the selection of treated and non-treated units. This study attempts to examine the effect(s) of privatisation on the wages of workers from the Portuguese banking industry. As the *direct* target of this programme is the firm *itself* and not the employees, we would ideally like to evaluate the privatisation impact on those employees that either remained, joined or left the firm after its privatisation.[15] In this case, for the "joiner or leaver" employee, it would also be required to know the reason for their moving in or out of the firm, as the wage accepted by moving individuals varies remarkably according to their employment status. This kind of information is unfortunately unavailable in this dataset, which makes it difficult to interpret the results for these particular two groups. Further, if the employee became unemployed, self-employed or employed by local/central authorities (civil servants), we will not know which, as these organisations are not covered by this survey. In order to

[15] This contrasts with other types of intervention such as, the introduction of the minimum wage or the active labour market policies, in which both the policy and evaluation object targets coincide.

avoid these potential problems, this study strictly focuses only the effect(s) of privatisation on the wages for those employees that *remained* in the same firm after its privatisation. In this way, we are more likely to fulfill the assumptions of the difference-in-differences approach discussed in Section 4.[16] However, the simplification of the analysis is likely to generate a sample selection problem if the individuals who remain within the firm do not represent a random sample of the workforce of the firm. The potential important defect, while recognised but not addressed directly, should be kept in mind when interpreting the results of this approach.

Having re-defined the treatment effect we are interested in, let us determine our treated and control units. Our *treated units (*employees*)* correspond to all individuals that both work in each public firm subject to privatisation and retain their jobs after the implementation of the reform. To be more precise, let t' and t denote two points in time, representing respectively one period before (pre-treatment) and one after (post-treatment) the privatisation of a given public firm. Thus, the treated group includes all individuals that work both in t' and t for the firm being privatised. For selecting the non-treated units we follow the principle "the more comparison groups the better", (Meyer, 1995), by using information from the remaining three firm categories, public, national and foreign, prevailing in the banking industry to perform the analysis. Therefore, the corresponding *control or untreated* groups are composed of those workers employed in the remaining public firms (not subject to privatisation), national and foreign firms and that, similarly, kept their jobs between t' and

[16] As Blundell and Dias (2000) point out when we use repeated cross-section data and the composition of the groups change over time and is affected by the intervention, the assumption that $E(\alpha_i \mid D_i)$ or $E(\gamma_j \mid D_i)$ is constant over time, may not hold.

t. Public employees form the natural candidate control group, since their employment status is able to control for "public" specific-effects in the labour market. Comparing the change in the wage differential to private (national and foreign) firm employees can be viewed as measuring the wage effort of catching up with the wage pattern paid by these groups. This is particularly appealing when private national employees are considered. As mentioned in Section 3, almost all new owners of privatised firms were the previous owners before the nationalisation wave took place in the 1970s. Foreign employees appear as a neutral control group as they were not subject to the reform but experienced common macro effects.

In addition, note that the purpose of analysis is to compute the *overall* impact of privatisation in the banking sector and not firm by firm effects. Consequently, the ten firm privatisations' need to be condensed into one "single privatisation". The creation of the data sample for estimation is a two step procedure. In the first step, for each firm being privatised is assigned one pre-treatment t' and post-treatment t points in time, and the respective treated and non-treated individuals are extracted. The choice of t' and t is driven by economic considerations. Because the firms' process of reactive restructuring occurred mainly after the implementation of the reform, as referred to in Section 2.3, t' consists of a single calendar year prior to privatisation. In particular, the conventional procedure of the privatisation literature is followed, considering the calendar year of each firm privatisation, the year 0. Therefore $t' = -1$, corresponds to the calendar year prior to each privatisation date. In contrast, for the post-treatment period, we allow privatisation effects to vary over time following Gupta *et al.*'s (2001) discussion. The post-treatment period ranges between one and four years , $t = 1$, 2, 3 and 4, corresponding either to one, two, three or four cal-

endar years after each privatisation date.[17] The second step consists of aggregating in each t' and t points in time, all treated and non-treated individuals of the respective ten firms privatised using a *moving window* as shown in Kluve *et al.* (1999).[18] As a result, individuals from privatised firms, are considered non-treated and treated at different points in time.

The empirical analysis is based on prime-age individuals not yet subject to retirement. Therefore, the sample is further restricted to individuals aged between 18 and 65 years according to the definition of the vertical collective agreement prevailing in the industry. Apart from these two requirements, only observations without complete demographic information in t' and t used for the outcome equation were dropped.

As the outcome variable, we use the logarithm of hourly wage constructed as the logarithm of the sum of monthly base wage, plus the regular and irregular components of the wage, payment indexed to tenure and overtime divided by normal and extra hours worked.[19] Hourly wage is preferable to monthly wage because workers from privatised firms experienced different length of hours of work after the reform.[20] In addition, wages are converted to real terms (1998 prices) using the Consumer Price Index (IPC).

In this sample extraction design, the difference-in-differences estimator from equation 3, is obtained alternatively by differencing the outcome and observable variables between period t and $t' = -1$ for each individual i, and including three indicator variables in the

[17] This postreatment period choice is also conditioned by the first merger wave in 1998 in banking industry, which involved recently privatised firms.

[18] This sample procedure corresponds to the examination of the effects of the reform on 63%, 51%, 46% and 43% of the banking workforce after one, two, three and four years, respectively in those institutions that remained between $t' = -1$ and t.

[19] The hourly wage is constructed in the same way as the literature that uses the same dataset does. See, *inter alia*, Vieira *et al.*(1997).

[20] Table 7 provides summary statistics of our treated and control groups.

model, each one referring to a control group. A separate regression of the form,

$$W_{ijt} - W_{ijt'} = \lambda_0 + \lambda_1 P_i + \lambda_2 N_i + \lambda_3 F_i + \phi\left(\mathbf{X}_{ijt} - \mathbf{X}_{ijt'}\right) + \sum \delta_k + \varepsilon_{ijt} - \varepsilon_{ijt'} \qquad (4)$$

for each t equals to 1, 2, 3 and 4, is estimated, where the binary variables, P_i, N_i and F_i, identify if individual i is employed in a privatised, national or foreign firm, respectively.[21] The coefficient λ_1 corresponds to the difference-in-differences estimator from equation 3, θ, when public employees form the comparison group. Similarly, $\lambda_1 - \lambda_2$ $(\lambda_1 - \lambda_3)$ gives the difference-in-differences estimator when national (foreign) employees serve as control group. The vector $\mathbf{X}$ includes observable characteristics controlling for the number of schooling years (education), seniority, potential experience and its square, logarithm of firm size and logarithm of total duration of work.[22] This specification also allows the economic cycle involving each privatisation, $\sum \delta_k$, to have different (intercept) effects on the outcome.[23]

Table 3 and 4 (Figure 1 and Figure 2) display (plot) the results of the estimated privatisation effect on wages for men and women, respectively. As discussed in Section 2, the expected theoretical effects of the reform are ambiguous for these two demographic groups. In each row, the estimates correspond to a difference-in-differences privatisation effect defined according to the control group specified in the left hand side column of each table. For

[21] Heckman and Hotz (1989) refer to this as flexible specification, which allows different structures of real wage-change over time. McGuckin and Nguyen (2001) apply this model to explore the effects of ownership changes on wages and employment, using plant-level data.

[22] Other variables such as regional dummies, bargaining regime status, part-time status and occupation indicators although available from the data were not, individually and jointly, statistically significant and thus, excluded from the analysis.

[23] The term $\sum \delta_k$ would represent six indicator variables according to each privatisation date. when $t = 1$. Given the omission of the year 1990 in the dataset, this term corresponds either to five (when $t = 1$), four (when $t = 2, 3$) or three (when $t = 4$) indicator variables.

example, the figure -.087 (first row, second column) from Table 3, indicates that during the first two years post-reform, retained men in privatised firms were paid 8.3 ($e^{-.087} - 1$) less percent than their respective counterparts in public firms.

As Table 3 reveals, unlike former evidence, the effects of privatisation vary in sign and magnitude according to time and control group considered, as discussed by Gupta *et al.* (2001). Moreover, Figure 1 seems to suggest a *positive* relationship between time of restructuring and wage variation rate regardless the choice of the control group. During the first two years after privatisation, men experience negative wage growth rates, which tend to be reversed in the subsequent periods. These wage growth losses are particularly *clear* over the first two years post implementation of the reform, regardless the choice of the comparison group. Then, this result supports the general objective of restructuring (cost reduction) implicit in the implementation of the policy and indirectly confirmed by Pinho (1999). As referred previously, the Portuguese banking industry experienced a significant improvement in the efficiency level between 1988-97 particularly pronounced among the privatised institutions. Moreover, this result is also consistent with McGuckin and Nguyen (2001) findings regarding the effects of ownership changes in the US manufacturing sector: around 76% of employees experienced lower wage growth rates after the ownership change. On the other hand, deregulation of the product market, a related policy implemented in order to increase the degree of product market competition, leads in general to declines in the wage growth rate. Black and Strahan (2001), for instance, find that in the US banking industry male wages fell by 12.5 percent.

Three years post-reform the effects of privatisation are mixed whereas in the fourth

year after privatisation, retained employees are only in disadvantage if compared to their counterpart in domestically owned firms as their wages grew clearly faster when compared to public or foreign firms, respectively. For this period of analysis, the results are then consistent to those found by Parker and Martin (1996) despite the fact that their analysis includes all workforce regardless the gender. These authors find that after four or five years privatisation, wages on average, had increased (between 0.0 and 8.4 percent) in 7 out 11 privatised firms in UK when compared to the whole economy.

These results seem to suggest a change in the pay policy of privatised firms. After firms have completed the main adjustments (elimination of redundant labour force and reduction of wage growth), the remaining and more likely productive labour force has to be rewarded in order to reduce turnover. In line with efficiency wage theories and due to the higher homogeneity of the employees (in terms of observable or unobservable characteristics) prevailing in the four firms' categories, privatised firms have to pay higher wage growth rates in order to equate the wage level paid by the remaining firms (either public or private) in the industry. On the other hand, workers may also have employed a recognized higher level of effort and thus increased productivity, as a response of fearing an eventual threat of dismissal given the uncertainty introduced by the reform.

For women, similar conclusions can be inferred from Table 4 (Figure 2). In particular, the same *positive* relationship between wage variation and time restructuring tends to be observed, regardless of the choice of the control group. Wage growth cuts are again obvious across the three comparison groups throughout the two years post reform. The major difference is that the intensity of wage decline with respect to public employees is lower (greater)

to women in the first (two) year (s) of analysis. Therefore, the pattern of wage adjustment detected suggests a U-shaped relationship when public employees are the control group.

The results presented so far regarding the effects of privatisation on male and female workers are surprising, as they seem to contradict the predictions of the Gary S. Becker (1957) model that product market competition drives out gender discrimination. If this were the case, then women, who earn on average less than men, would have improved their relative position either experiencing lower wage losses or stronger wage gains, according to the timing of the effects.[24] Unless strong composition effects occurred at the same time as privatisation, such as relatively more women moving into higher skilled occupations after privatisation, the results shown above would corroborate Gary Becker's prediction. Nevertheless, the variable variation in occupation was not significant in equation 3, which rules out this hypothesis.

Next Table 5 contains the results for male top managers. Following Lopes and Silanes (1999) work, we adopt a broad concept of top managers. We include only male top managers who kept the same occupational category after the implementation of the reform.[25] For this group, the theoretical predictions point to a clear increase in the wage growth rate. Surprisingly, the empirical evidence indicates the opposite effect. The wage differential has declined significantly during the period of wage decline previously identified. Further, the magnitude of the wage erosion, between 11 and 17 percent, is substantially greater than the wage loss detected before. In addition, the evidence on wage growth gains after the

[24]Research on the impact of the product market deregulation on racial and gender discrimination, is typically supportive of shrinking differentials. For instance, Black and Strahan (2001) reports that in the US banking industry wages fell by 12.5 and 2.9 percent, for men and women respectively, after branching deregulation.

[25]Results remain qualitatively unchanged when we include all top managers, even those who moved to a lower occupation in the firm.

second year is less compelling. A possible explanation for this finding may be related to the downsizing strategy introduced, which possibly altered their level of supervision.

These findings may suggest that this group had been enjoying substantial rents before the implementation of the reform. In order to examine further the robustness of this hypothesis, the equation previously specified is also estimated considering each of the three components of the logarithm of hourly wage. We run the equation using three different dependent variables: the logarithm of the *hourly effective wage* as defined by the vertical collective agreement, the logarithm of irregular subsidies and the logarithm of regular subsidies of the wage. Table 6 presents the difference-in-differences estimates for these three wage components.

As suspected, two or three years after the introduction of the reform, the main driving forces explaining the wage differential decline are the irregular or regular components of the hourly wage. During the two first years post reform, the irregular wage subsidies differential was reduced between 75 and 83 percent. However, this was observed only for a narrow subsample of managers. For the remaining managers, the cuts in the regular subsidies are certainly the main cause for the erosion of the total hourly wage examined three years post-reform. These results are however, not free from criticism. Although there is no recorded data, it is well-known that in the banking industry, managers enjoy fat bonuses not included in their cash compensation such as free car or excellent insurance schemes.

6 Concluding remarks

This paper examines the impact of privatisation on wages in the Portuguese banking industry for the period 1989-1997 using individual-level longitudinal data from *Quadros de Pessoal*.

The design of privatisation reform and the quality of the data employed, allow us, not only to overcome the main limitations of the previous labour market privatisation literature, but also to improve it in a number of ways.

First, because privatisation reform did not affect all public banks and the structure of the industry is diverse, the effect of privatisation is evaluated taking into account three comparison firm groups within the banking sector. Thus, the comparison with groups within the same industry guarantees, in principle, that the impact of any other economic factor not controlled for can be adequately eliminated by the difference-in-differences estimator.

The quality and nature of the matched employer-employee dataset enable us to build a balanced panel data and thus, assess the privatisation impacts on *dimensions* not yet explored. The effects were examined on those individuals who remained in privatised firms after the introduction of the reform. In particular, the effects were analysed on three different demographic groups: men, women and male top managers. Further, in contrast with almost all previous research, this study uses the *actual* instead of estimated (total labour costs divided the level of employment) wage paid to individuals and controls for differences in human capital attainments. Finally, the longitudinal nature of the dataset permits us to appraise the magnitude of the privatisation effects over time. The effects of privatisation on wages were examined after one, two, three and four years of its introduction.

The main lesson of this paper is that the time dimension of analysis is highly important. For both men and women, *a positive* relationship between time of restructuring and wage variation seem to appear, regardless of the choice of the comparison group. During the first and second years after the introduction of reform, both demographic groups experience

definite wage losses, which tend to be reversed after the third year. Hence, the results presented in this study confirm the previous research if long term effects are considered. Nevertheless, wages in privatised firms, again for both men and women, tend to align with the pattern paid by the remaining firms in the industry. Estimates for top managers surprisingly contradict the theoretical predictions as this group experienced stronger and lasting wage growth losses than the average overall distribution.

There are at least two potentially important areas for further research. First, the results may be biased due to the sample selection problem not addressed here. A re-evaluation of this complex observational study would be useful. A full evaluation of privatisation effects would also require consideration of how wages evolved for displaced workers.

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Table 1: Employment and wage levels by firm ownership, 1989-1997

	1989	1991	1993	1995	1997
Average employment per firm					
Public	7,323	6,771	6,812	6,793	6,856
Privatised	*3,884*	*3,733*	*3,663*	*3,425*	*3,152*
National	318	652	619	537	203
Foreign	134	185	174	209	409
Full time status (%)					
Public	89.1	91.5	95.2	98.0	98.5
Privatised	*83.3*	*98.5*	*96.3*	*98.4*	*98.7*
National	98.9	97.4	99.7	99.6	99.5
Foreign	98.6	99.1	98.9	99.8	99.1
Average of log of real hourly wage - overall distribution					
Public	7.22 (.328)	7.37 (.372)	7.46 (.360)	7.54 (.326)	7.49 (.328)
Privatised	7.12 (.354)	7.23 (.361)	7.36 (.411)	7.44 (.365)	7.45 (.368)
National	7.34 (.496)	7.38 (.389)	7.47 (.375)	7.57 (.428)	7.48 (.526)
Foreign	7.52 (.555)	7.63 (.580)	7.82 (.622)	7.60 (.500)	7.71 (.494)
Number of unemployed people from the financial sector					
Women	1,400	3,400	5,800	8,600	8,700
Total	3,100	5,700	12,000	18,300	16,200

Source: Own computations based on QP, MSST (1989-1997) and INE (Inquérito ao Emprego - 4^{o}trimestre).
Note: Standard deviation in parentheses.

Table 2: Mean attributes of banking employees by firm ownership, 1989-1997

	1989	1991	1993	1995	1997
Male (%)					
Public	66.6	65.4	64.9	61.4	59.2
Privatised	*75.4*	*74.0*	*72.1*	*71.6*	*70.8*
National	88.0	92.1	92.0	82.9	69.2
Foreign	60.0	61.6	62.1	61.9	74.9
Schooling					
Public	9.7	9.8	10.1	10.7	10.9
Privatised	*9.2*	*9.2*	*9.3*	*10.1*	*10.6*
National	11.1	11.2	11.3	12.3	12.9
Foreign	10.7	11.3	11.2	12.8	12.8
Age					
Public	40.7	42.5	42.7	40.4	40.9
Privatised	*40.7*	*41.9*	*42.8*	*43.3*	*43.7*
National	32.3	30.8	30.9	32.9	34.1
Foreign	36.7	35.1	35.0	33.9	36.9
Tenure					
Public	13.9	15.7	16.0	14.2	14.7
Privatised	*14.0*	*15.2*	*16.0*	*17.0*	*17.5*
National	4.8	1.8	2.3	4.4	4.4
Foreign	9.8	7.2	6.5	5.0	6.6
Experience					
Public	25.0	26.7	26.6	23.8	24.0
Privatised	*25.4*	*26.7*	*27.5*	*27.2*	*27.2*
National	15.2	13.6	13.6	14.6	15.3
Foreign	20.0	17.8	17.7	15.0	18.1

Source: Own computations based on QP, MSST (1989-1997).

Table 3: DinD estimates of the impact of privatisation on the log hourly wage of men

Time effect Control group	+ 1 year	+ 2 years	+ 3 years	+ 4 years
Public	−.092 (.003)	−.087 (.004)	−.056 (.004)	.082 (.004)
National	−.058 (.002)	−.095 (.003)	−.115 (.003)	−.041 (.005)
Foreign	−.061 (.009)	−.000[a)] (.011)	.105 (.017)	.205 (.033)
R^2	.163	.174	.163	.168
Sample size	110,601	69,030	52,983	33,671

Source: Own computations based on QP, MSST (1989-1997).
Notes: Robust standard errors in parentheses. All coefficients are statiscally significant at the 10 percent level or less, except that marked with a).

Table 4: DinD estimates of the privatisation impact on the log hourly wage of women

Time effect Control group	+ 1 year	+ 2 years	+ 3 years	+ 4 years
Public	−.062 (.004)	−.115 (.006)	−.056 (.006)	.043 (.007)
National	−.058 (.004)	−.098 (.005)	−.101 (.005)	−.053 (.008)
Foreign	−.071 (.011)	−.019[a)] (.013)	.104 (.020)	.194 (.035)
R^2	.195	.208	.197	.270
Sample size	41,551	23,691	19,450	13,209

Source: Own computations based on QP, MSST (1989-1997).
Notes: Robust standard errors in parentheses. All coefficients are statiscally significant at the 10 percent level or less, except that marked with a).

Table 5: DinD estimates of the privatisation impact on the log hourly wage of top managers

Time effect Control group	+ 1 year	+ 2 years	+ 3 years	+ 4 years
Public	−.092* (.012)	−.179* (.019)	−.220* (.022)	−.030 (.022)
National	−.007 (.010)	−.153* (.015)	−.170* (.016)	−.099* (.020)
Foreign	−.117* (.025)	−.113* (.022)	−.093** (.045)	−.054 (.097)
R^2	.174	.112	.106	.124
Sample size	7,702	4,657	3,550	2,066

Source: Own computations based on QP, MSST (1989-1997).
Notes: Standard errors in parentheses. *, ** and *** denote statiscally significant at the 1, 5 or 10 percent level, respectively.

Table 6: DinD estimates of the privatisation impact on the log wage components of male top managers

Time effect	Wage components	Public	National	Foreign	Sample	R^2
+ 1 year	Effective hourly wage	−.026* (.005)	−.016 (.005)	.010 (.021)	7,702	.236
	Irregular subsidies	−.153 (.262)	−.381 (.277)	−.773* (.275)	1,530	.255
	Regular subsidies	.094* (.020)	.205* (.020)	.116* (.032)	7,366	.084
+ 2 years	Effective hourly wage	.006 (.007)	−.089* (.006)	−.020 (.011)	4 ,657	.196
	Irregular subsidies	−1.788* (.423)	−1.38* (.414)	−1.503* (.470)	850	.247
	Regular subsidies	.111* (.033)	.116* (.028)	.183* (.040)	4,357	.062
+ 3 years	Effective hourly wage	.055* (.011)	−.079* (.009)	−.016 (.027)	3,550	.134
	Irregular subsidies	−1.645** (.667)	−.256 (.671)	−1.027 (.833)	462	.301
	Regular subsidies	−.502* (.055)	−.502* (.044)	−.743* (.081)	3,412	.105
+ 4 years	Effective hourly wage	.157* (.016)	−.034*** (.018)	.057 (.070)	2,066	.120
	Irregular subsidies	−1.111* (.298)	−.504 (.449)	.852 (.903)	287	.296
	Regular subsidies	.301* (.075)	−.190* (.072)	−.827* (.180)	2 ,039	.064

Source: Own computations based on QP, MSST (1989-1997).
Notes: Robust standard errors in parentheses. *, ** and *** denote statistically significant from zero at the 1, 5 and 10 percent levels.

Figure 1: The impact of privatisation on the hourly wage of men

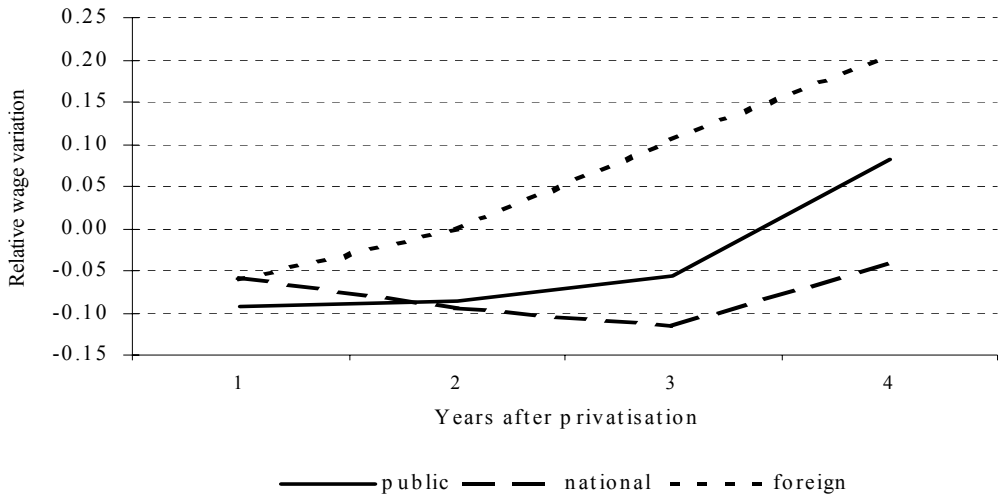

Figure 2: The impact of privatisation on the hourly wage of men

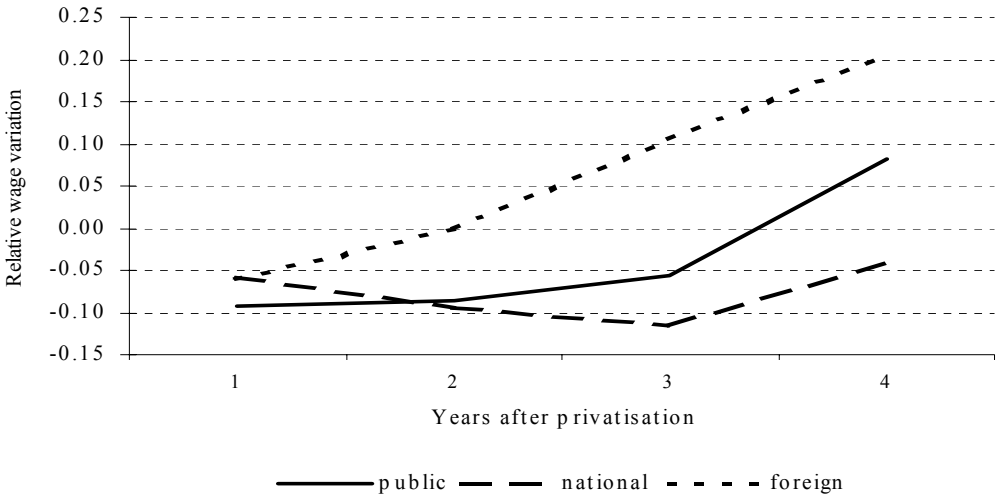

Figure 3: The impact of privatisation on the hourly wage of women

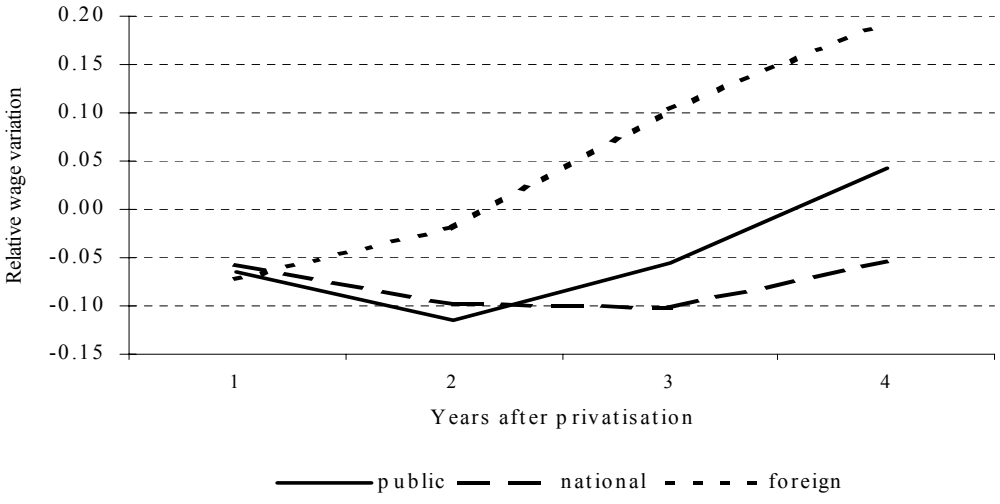

Figure 4: The impact of privatisation on the houly wage of top managers

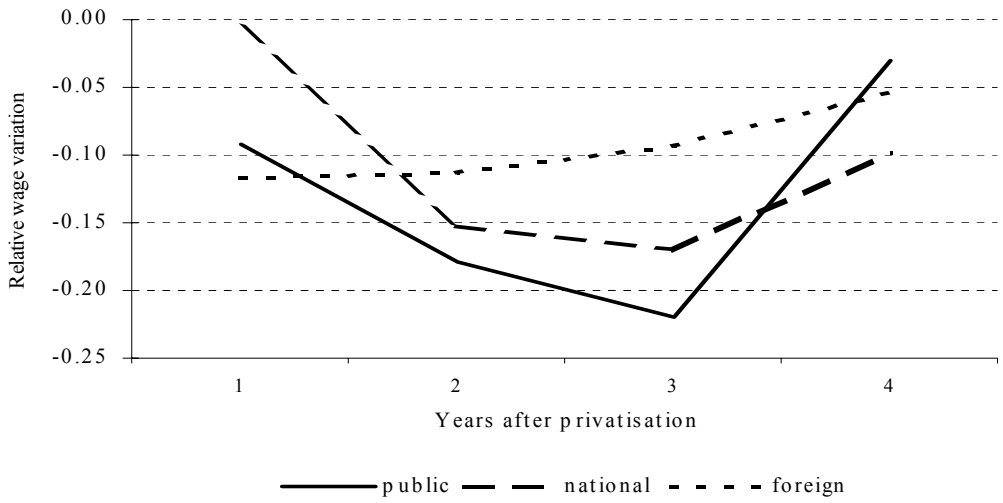

Table 7: Description of the data in time period t

	t=1				t=2			
variables	Pub.	Privatis.	Nat.	For.	Pub.	Privatis.	Nat.	For.
ln(wage)	7.43	7.33	7.46	7.72	7.41	7.32	7.50	7.71
male (%)	66.1	73.4	76.1	59.7	63.8	73.6	77.9	60.2
schooling	9.6	9.2	10.2	11.6	9.5	9.3	110.2	11.2
age	43.8	44.1	41.9	36.7	45.1	44.9	41.9	37.8
tenure	17.5	17.4	15.3	7.85	19.4	18.3	15.3	8.5
experience	28.1	28.9	25.6	19.1	29.6	29.6	25.8	20.6
ln(duration)	4.99	4.98	5.00	5.04	4.99	5.04	5.03	5.04
part-time (%)	4.2	1.5	1.6	1.2	6.4	2.8	1.7	.9
occupation								
Top managers	5.0	5.3	7.3	21.3	5.1	5.4	7.4	21.7
other managers	8.3	9.0	10.3	7.9	8.5	9.5	10.1	7.9
foremen	4.6	4.2	3.2	3.5	3.4	3.8	3.3	2.8
highly skilled	7.6	7.4	8.7	9.8	8.9	8.7	7.9	10.3
skilled	66.8	65.5	65.7	52.4	65.8	64.7	66.6	52.6
unskilled	7.8	8.1	4.7	4.9	8.2	7.8	4.7	4.6
region								
North	23.3	22.3	38.2	-	23.8	25	45.7	
Lisbon	72.3	75.8	59.1	100	67.3	75	51.6	100
Isles	4.4	1.9	2.7	-	8.9	0	2.7	
Sample	40,577	23,450	84,889	3,236	14,245	18,880	57,057	2,539
	t=3				t=4			
ln(wage)	7.47	7.38	7.52	7.63	7.43	7.49	7.56	7.66
male (%)	60.8	73.9	75.7	61.6	61.5	75.9	75.9	59.1
schooling	9.8	9.6	10.1	11.7	10.2	9.65	10.1	12.0
age	45.7	45.6	43.4	38.5	44.1	44.8	44.1	39.4
tenure	20.6	19.1	17.2	9.49	18.1	18.6	17.9	10.9
experience	29.9	30.0	27.3	20.7	27.9	29.2	28.0	21.5
ln(duration)	4.98	5.02	5.02	5.04	5.03	4.98	5.04	5.05
part-time (%)	6.5	1.0	1.4	.0	2.7	1.8	1.2	.0
occupation								
Top managers	5.6	5.8	7.6	20.7	4.7	7.3	7.4	20.3
other managers	8.8	10.3	12.0	8.8	8.4	13.3	12.4	9.1
foremen	2.7	3.8	3.4	3.9	4.5	3.9	3.	4.7
highly skilled	9.9	9.6	9.9	10.7	8.0	10.5	10.9	10.3
skilled	66.5	64.5	62.4	53.5	68.3	58.0	61.7	54.1
unskilled	6.4	6.0	4.6	3.0	6.1	6.8	4.2	1.5
region								
North	1.5	24.8	34.0		-	7.2	35.9	-
Lisbon	89.9	75.1	62.6	100	96.7	92.7	61.6	100
Isles	8.6		3.4		3.2	-	2.3	-
Sample	9,487	17,212	44,484	1,250	12,504	8,952	24,844	536

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