

# Generality, State Neutrality and Unemployment in the OECD

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**Abstract** According to Buchanan and Congleton (1998), the generality principle in politics blocks special interests. Consequently, the generality principle should thereby promote economic efficiency. This study tests this hypothesis on wage formation and labor markets, by investigating whether generality defined as state neutrality could explain employment performance among OECD countries during 1970-2003. We identify three types of non-neutrality concerning unemployment. These include the level or degree of government interference in the wage bargaining process over and above legislation which facilitates mutually beneficial wage agreements, the constrained bargaining range (meaning the extent to which the state favors or blocks certain outcomes of the bargaining process), and the cost shifting (which relates to state interference shifting the direct or indirect burden of costs facing the parties on the labor market). Our overall hypothesis is that non-neutrality or non-generality increases unemployment rates. The empirical results from the general conditional model suggest that government intervention and a constrained bargaining range clearly increase unemployment, while a few of the cost shifting variables have unexpected effects. The findings thus give some, but definitely not unreserved, support for the generality principle as a method to promote economic efficiency. One implication may be that the principle should be amended by other requirements if the political process shall indeed be able to promote economic efficiency.

**Keywords:** generality, state neutrality, efficiency, unemployment, wage bargaining, cost shifting, OECD

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## 1 Introduction

Buchanan and Congleton (1998) advocate the introduction of a *generality principle* in political decision making.<sup>2</sup> Through such a principle, they argue, legislation will “apply to all persons independently of membership to in a dominant coalition or an effective interest group”. In other words, generality will promote impartiality and state neutrality. Presumably this will also promote economic efficiency since the enforcement of the generality principle will block both wasteful rent-seeking activities and harmful interventions into markets and civil society.<sup>3</sup>

The claim has empirically been tested in a large number of straightforward areas including the political economy of public debt and power of median voter theory in explaining public debt (Brennan, 2012), assessing Richardian equivalence considering real effects of public policies on aggregate demand (Ricciuti, 2003), natural gas consumption and departures from marginal cost pricing (Davis and Muhlegger, 2010), and more.

In this study, we test this hypothesis on wage formation and labor markets, by investigating whether generality defined as state neutrality could explain employment performance among OECD countries during 1970-2003. The specific reason for choosing labor market regulation is to test whether generality defined state neutrality or impartiality holds in labor market related issues. State plays a significant role in policy formulation, legislation and when needed as neutral mediator in wage bargaining process and labor market conflict resolution. To our knowledge such an empirical test of the economic consequences of the generality principle or state neutrality has not been carried out previously. Despite labor market regulation often involves a complex mix of actors as well as a mix between individual and collective elements, we believe an empirical test of neutrality to labor market policy area can generate potentially interesting result.

We identify three, partly overlapping types of non-neutrality concerning labor market regulations associated with unemployment. These include the level or degree of government interference in the wage bargaining process over and above legislation which facilitates mutually beneficial wage agreements, the constrained bargaining range (meaning the extent to which the state favors or blocks certain outcomes of the bargaining process), and the cost shifting (which relates to state interference shifting the direct or indirect burden of costs facing the parties on the labor market).

To test the effects of the enforcement of the generality principle on wage formation and labor markets may perhaps be particularly interesting, since much of the literature and standard textbooks in labor economics, almost as a postulate, regard all labor markets to be in need of regulations that favor the sellers of labor and their organizations, i.e. workers and labor unions. Hence, according to this literature the state should *not* be neutral on the market if economic efficiency and employment should be promoted (e.g. Kaufman and Hotchkiss 2005). In most, at least in the European, OECD

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<sup>2</sup> This paper sets out to test a well-established theoretical claim based on Buchanan and Tullock empirically. The theoretical claim can be traced back at least to Immanuel Kant (1724-1804) *The Critique of Judgement* which was originally published in Prussia in 1790, and translated by Werner S. Pluhar, 1987, Indiana: Hakett Publishing Company. See also Buchanan (1993a, b) and Congelton (1997).

<sup>3</sup> In the case of fiscal policies Berggren (2000), however, argues that the generality principle should be augmented with a requirement that “public expenditures as a share of GDP may not increase above the average share of the preceding ten years” in order to minimize the risk of fiscal explosion.

countries this is also the actual practice.

In contrast, our overall hypothesis is thus that non-generality or non-neutrality increases unemployment rates. To our knowledge such an investigation of a negative relationship between state neutrality and level of unemployment has not been conducted systematically previously.

The paper begins with a discussion on the previous research related to the current study in Section 2. The generality principle, state neutrality and labor market policies are discussed in more detail in Section 3. The data is described in Section 4. The empirical model is formulated in Section 5 and the results are presented in Section 6. The summary of our findings is discussed in Section 7.

## **2 Previous research**

Several studies have investigated the causes of unemployment at an across-country level. One common method has been the fitting of empirical data with econometric techniques, while another approach has modeled and distinguished between different 'types' of economies, such as the 'American' and 'European' economies. Furthermore, there has also commonly been a division in the research community between studies that, on the one hand, have concentrated on the impact of institutions, and on the other, have focused on the role of various shocks on unemployment (Nickell, Nunziata and Ochel, 2005).

Saint-Paul (2004), studying the specific European development, has summarized five hypotheses from earlier research that are likely to give explanatory power to the issues of employment. Saint-Paul's hypotheses refer to both historical and legal factors, as well as to political and economic factors. The hypotheses include: (i) Different Shocks – countries that reformed their labor markets have faced different shocks, this in turn has led them to different reform preferences in terms of observed rigidities on the labor market; (ii) The Euro – the non-euro countries have lower unemployment; (iii) Path Dependence – so-called 'status-quo bias'; some labor market rigidities create their own constituency, for instance, strong employment protection could preserve a number of workers in unproductive jobs; (iv) Small versus large countries – the largest European countries have higher unemployment, and finally (v) The Latin versus Anglo-Saxon (including Nordic) countries; this hypothesis states that Anglo-Saxon countries have been successful in reducing unemployment.

Thus, one branch of research recognizes the importance of historical factors and path dependency in explaining different labor market and economic outcomes: notwithstanding variations in politics, unemployment problems often have deep historical roots and a country's legal origins are, judging from this research, strongly associated with its labor market. In a study of 85 countries, Botero et al. (2004) showed that heavier regulations of labor were associated with lower labor force participation and higher unemployment. This, in turn, was an effect of long-standing, inherited legal traditions that depend on a country's legal origins. Accordingly, deeply rooted social customs, which go beyond legal constraints, have been viewed as important causes of various rigidities in the labor market, such as wage-inflexibility and unemployment (Agell, 1999).

Another branch of research has emphasized more contemporary economic, political and policy related factors. Here, it is often debated if, and to what extent, labor market

institutions affect unemployment and the differences in performance between economies. These institutions generally relate to collective bargaining systems and to employers' associations and labor unions (e.g. measuring union density), as well as to the extent to which corporatism is prevalent in the economic system. Often, such institutions and arrangements have different effects and can lead to different outcomes.<sup>4</sup> For instance, in a study by Kahn (2000), it was shown that while greater union density led to higher relative pay for less skilled workers, it also lowered their relative employment probabilities. Therefore, research over the past thirty years shows much uncertainty in the way various collective bargaining systems affect a country's macroeconomic performance (see Flanagan, 1999).

Studies have also often related labor market performance and unemployment to employment protection laws and various designs of benefit systems. It has for instance been claimed that job security provisions – a form of a non-price regulation – inhibit the speed of adjustment in labor markets. Such restrictive legislation slow adjustment down and slacken labor market flows (Salvanes, 1997; Burgess, Knetter and Michelacci, 2000). Therefore, scholars have regularly investigated the relationship between changes in the legal and benefit system and the labor market outcomes. Nickell, Nunziata and Ochel (2005) have claimed that shifts in central labor market institutions explain the greater part of the movements of unemployment patterns in the OECD countries since the 1960s. According to Nickell, Nunziata and Ochel, changes in unemployment benefit systems, in labor taxes, and in employment protection laws are part of a set of important institutional variables that significantly affect unemployment – increasing employment protection and more generous benefits increase unemployment.

Accordingly, across-country evidence often suggests that high minimum wages and generous unemployment benefits as well as legal minimum wages are strongly associated with high unemployment rates. Countries that have managed to address their unemployment problem have implemented several labor market reforms (Nickell, 1998 and 2003; Ebbinghaus and Visser, 2000; Traxler et al., 2001; Aidt and Tzannatos, 2002; Saint-Paul, 2004). Alternatively, the overall rising unemployment since the 1960s can be explained by interaction between shocks and institutions (Blanchard and Wolfers, 2000). Other research results have been more skeptical and have found less consistent results in terms of the impact of social security benefits, employment protection and minimum wages and the overall effect of labor market deregulation on unemployment (see e.g. Buchele and Christiansen, 1999; Morgan and Mourougane, 2005).

As shown, previous research has not, to our knowledge, focused on state neutrality per se, but it is evident that several of the studies referred to above implicitly deal with questions relating to our topic of research. To observe this, the concept of state neutrality needs to be explicated.

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<sup>4</sup> Often, related literature has also investigated the relationship between labor market institutions and wage-inequality or other labor market issues, not directly studying unemployment per se (see e.g. Wallerstein, Golden and Lange, 1997; Moller et al. 2003; or Koeniger, Leonardi and Nunziata, 2007). Other studies have analyzed the relationship between unemployment and other factors related to collective bargaining, e.g. corporatism. Kenworthy's (2002) study of the effect of corporatism on unemployment is an example here.

### 3 Generality, State Neutrality, Interventionism and Labor Market Policies

In essence, the generality principle stipulates that the state should be impartial or neutral. According to Buchanan and Congleton (1998), legitimate state action should not discriminate for or against any person or group. With generality, the state would treat all citizens equally.

It should be noted, however, that the generality principle or state neutrality does not imply non-interventionism or limited government *per se*.<sup>5</sup> Their argument “is about the constitutional structure of those sectors of social interaction that are politicized; it is not directly about drawing some borderline between these (public) sectors and the private (market) sectors” (page 147). The point is rather that government action which adheres to the generality principle will be efficient since it discourages the natural tendency of majoritarian democracies to give incentives to special interest to engage in rent-seeking activities. Moreover, they believe that this would also promote the efficiency of the policies adopted and, by implication, economic efficiency in general. (p. 15)

In this study we test this hypothesis on wage formation and labor markets, by investigating whether generality defined as state neutrality could explain employment performance among OECD countries during 1970-2003. The term “state neutrality” is employed in the study as impartiality of the state in labor market related issues. A neutral state does not in policy formation or in legislation one-sidedly favor, or support, one party. Furthermore, according to our interpretation, the government should also refrain from intervening – directly or indirectly – in the wage bargaining process. This means that general or neutral legislation primarily would facilitate for employers and employees, unions and employers associations, to arrive at mutually beneficial wage agreements, regardless of the outcomes of those agreements.

Perhaps somewhat surprisingly to most readers, such a view on state neutrality has in fact been a core idea in the Nordic labor market model for more than one hundred years. Already in 1898 the major players on the Danish labor market, both unions and employers’ organizations, made an over-arching agreement for how to deal with industrial disputes, bargaining, wage setting etc, without state involvement. Sweden followed in 1906, and later in 1938, with similar agreements. Both Norway and, perhaps to a lesser extent, Finland followed with similar steps (Nycander, 2000 and 2002).

Even though there may have been shorter or longer periods of state partisanship, this ideology of state neutrality is still a living tradition in all of these countries, shared not only by the parties on the labor market themselves but also by practically all political parties across the political spectrum. For example, in 1999 the social democratic minister of labor market relations Mona Sahlin, presently the leader of the party, clearly stated that a well-functioning system of wage formation rests on the notion of state neutrality.<sup>6</sup>

This is a stark contrast to the practice in both the Continental and the South-European countries, but interestingly enough is similar to the Anglo-Saxon models. In the latter case, however, individual contracts instead of collective agreements dominate

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<sup>5</sup> This is similar to a competing interpretation of state neutrality which states that the state should not interfere in the private spheres of individuals. See Trachtenberg (2001) for a more philosophical critique of the Buchanan-Congleton perspective.

<sup>6</sup> Regeringens proposition 1999/2000:32

(see e.g. Bamber, Lansbury and Wailes, 2004; Freyssinet and Seifert, 2001; Slomp, 1998).

There are at least four distinct reasons why such a contractual system may be advantageous compared to a more regulated system:

Firstly, it provides opportunities to flexibly adapt wages and benefits to the varying conditions occurring in different companies, sectors, branches and regions of the economy. Secondly, a contractual system thus promotes pluralism and experimentation, which in turn encourage learning and efficiency. If and when new and better ways of organizing various activities or wage setting occur, these may easily spread to other parts of the economy. Thirdly, state neutrality gives the actors or partners on the labor market full responsibility for their own agreements, whether good or bad, without accommodating actions from the state. Fourthly, state neutrality, as argued by Buchanan and Congleton, tends to block special interests and rent-seeking activities by labor unions and employers' organizations. Overall, such a system may work more similarly to competitive markets in general where supply and demand, experimentation and innovation, and voluntary contracts provide price signals for the efficient allocation of resources, including labor (Hayek, 1945, 1978, 1980).

Taken together our hypothesis is thus that state neutrality will be beneficial to the creation of new jobs and employment. We will test the hypothesis by studying the effects of the three types of non-neutrality identified above.

Below we develop a model in which these three main factors, or categories, are believed to affect unemployment. These factors are measured by indicators derived from earlier research. The first main category concerns direct *Government involvement* in the labor market over and above legislation which facilitates unions and employers associations, employers and employees, to come to mutually beneficial wage agreements. Two variables are included in this category. In the first variable, government involvement in the wage bargaining process (Government involvement index) has often been analyzed in relation to wage inequalities and has been used as a wage-setting measure in earlier research. However, this measure has not been specifically employed to analyze state neutrality. The variable is measured as a time-varying index (1-15) that measures increasing government involvement. For instance, 1 (one) implies that the state is completely uninvolved in the wage bargaining process, whereas increases of the index imply increasing government involvement, such as government extension of collective agreements, enforcement of cost of living adjustment, national wage schedules etc (see Appendix 1). Some, though perhaps not all, of these indicate non-neutrality.

The second variable in this category measures if there exists a minimum wage law in a specific country and in a certain year, which clearly is a breach of state neutrality. This is a dummy variable that can vary over time (0, 1), and which measures only the presence of a state-imposed law that sets the wages at a minimum level. Thus, it does not measure the very level or ratio of minimum wages over time or across countries. Some countries, such as Sweden or the other Nordic countries, do not apply minimum wage laws, while this is common in, for example, Mediterranean countries (FedEE, 2005).

The second category, *Constrained bargaining range*, meaning the extent to which the state favors or blocks certain outcomes of the bargaining process, is in the present article represented by one single indicator, namely *Employment protection*. The variable captures the strictness of employment protection laws on a scale of 0-2, with

increasing strictness. Employment protection often takes several forms but includes, for example limitations of dismissals, or employer's freedom to assign tasks etc. to employees (see Nickell et al., 2005). However, it is in many instances difficult to separate state-imposed employment protection regulated by law, from those various agreements and measures of employment security that often are negotiated or regulated in collective agreements. More specifically, even though the employment protection variable is used as an indicator of increasing difficulty for an employer to dismiss an employee, any general employment protection indicator should probably be taken as a more or less compact acronym for protection regulated in legislation as well as in collective agreements or customary practice etc. Thus, even if the variable in this particular circumstance is used as an indicator of non-neutrality – i.e. constrained bargaining range – it is acknowledged by the authors that the variable in many instances actually may measure agreements that *de facto* are negotiated without any government-imposed bargaining range. Still, it is quite clear that such “voluntary” nation-wide agreements about employment protection would not have occurred without supporting legislation of other kinds.<sup>7</sup>

The last category *Cost shifting* relates to non-neutral state interference shifting the direct or indirect burden of costs facing the parties on the labor market, between the parties or perhaps to a third party such as the state itself. Here, five related variables are employed to indicate the degree of cost shifting. Firstly, *Unemployment qualifying condition* measures the time needed to qualify for a benefit. The longer the time to qualify, the more of the cost associated with unemployment is carried by the individual and not by another or third party. Similarly, the variable *Unemployment benefit duration* is an indicator of how long an unemployed person is entitled to unemployment benefit. In terms of the first variable, this naturally varies strongly across economies and over time. It is thought that the longer the benefit duration, the more the costs for unemployment are carried by, for instance, a third party such as the state. A third and closely related variable, *Unemployment benefit waiting*, measures the time a person must wait to start receiving the benefit after becoming unemployed. This variable would indicate that the longer the waiting period for the benefit after becoming unemployed, the lower the cost for another or third party.

Two more variables are included in the non-neutral category of cost shifting and they refer more to the overall or general generosity in the social security system, *Unemployment* and *Sickness benefit generosity*, respectively. Both variables represent measures that take in several dimensions over the generosity of unemployment or sickness benefits, and they include benefit levels as well as the ratio of the working force actually insured in the system(s). It should be noted that both of these generosity indicators are not necessarily correlated – a high score on the unemployment generosity variable does not automatically imply that the score on the Sickness variable is high.<sup>8</sup>

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<sup>7</sup> For a discussion, see OECD Employment Outlook (2004). As also discussed by e.g. Buchele and Christiansen (1999), this measure is complicated and lacks some detail since it does not necessarily take into account the full force of restrictions on employers since much protection is negotiated in collective agreements rather than by government regulations.

<sup>8</sup> For a detailed description, see Scruggs and Allan (2006). Since the different indicators differ even within the one and the same economy, it is difficult to find a national coherent strategy for welfare in an overall sense, with exceptions of the Scandinavian countries and the Netherlands; Scruggs and Allan, 2006, p. 69.

## 4 The Data

The data used in this study cover 18 OECD countries observed for the period 1970-2003. Countries included are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany (West Germany), Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Sweden, Switzerland, United Kingdom, and the United States. The variables in the analysis relate to institutional and regulatory factors, as well as to welfare and economic incentive variables. The data is derived from previous research and assembled from different databases (for more detailed information, see Appendix 1).

Labor market and related variables are derived from Golden et al. (2002), “Union Centralization among Advanced Industrial Societies: An Empirical Study”. This dataset along with earlier versions has been previously used in analyzing, for example, determinants of wage inequalities (see Wallerstein et al. (1997), Golden and Londregan (2006), and Golden and Wallerstein (2006)). The Labour Market Institutions Dataset from Nickell and Nunziata (2001) has been employed earlier for studying unemployment and wages in the OECD (see for instance Nickell et al., 2001). More general welfare indicators in the analysis are from Huber et al. (2004), Comparative Welfare States Data Set. Moller et al. (2003) e.g. used this data in studying determinants of relative poverty. Finally, Scruggs’ (2005) data, “Welfare States Entitlement Data Set: A Comparative Institutional Analysis of Eighteen Welfare States”, contains, among other information, comprehensive data over qualifying conditions, benefits durations and generosity measures. It has, among other factors, previously been used by Scruggs and Allan (2004) in analyzing welfare state reform in advanced economies. Additionally, empirical data that measures self-employment in OECD countries has also been used (EIM data; Van Stel, 2003). The sample of countries does not include all OECD countries due to the fact that parts of the data have been employed by different studies to investigate aspects of labor market in the OECD. The degree of overlapping among the datasets determined the sample size. Table 1 presents summary statistics over the variables in the analysis.

The model structure is shown in Table 1 where the dependent variable is the rate of unemployment (UE) measured in percentage of the workforce. The independent variables are classified into 4 groups: (i) government involvement, (ii) constrained bargaining, (iii) cost shifting, and (iv) economic and country specific variables.

The government involvement category includes two variables: government involvement (GOVIN) and minimum wage law (MWLAW). The former varies in intervals from 1 to 15, indicating degrees of government involvement in wage setting, while the latter is a binary variable where the value 1 indicates the presence of a minimum wage law in the country. The second category contains only one variable; the constrained bargaining range (EP) is defined as a three scale degree of employment protection.

The third category, cost shifting, contains 5 indicators, including: unemployment qualifying (UEQUAL) condition defined as number of days worked before qualifying for the receipt of such benefit, unemployment duration (UEDUR) defined as the maximum duration of unemployment benefit, unemployment waiting time (UEWAIT) defined as the number of days of unemployment before a payment is made, unemployment benefit (UEMLOY), and sickness benefit (SICKNESS) generosity; in



these indices, a higher value indicates a higher generosity of the system with respect to the respective type of benefit payments.

The last category labeled as control variables includes observable economic, time and country specific variables or conditional variables including: a time trend (T) capturing time varying technology and policy effects, industrialization (INDUST) defined as the share of labor force employment in industries, total business ownership rate (TOTRATE) defined in percentage rate, investment rate (KI) defined as percentage of real GDP per employee, gross fixed capital (GROSSK) defined in national currencies, and finally two binary variables indicating location or groups of countries and labor market models of Scandinavian (SCAND) and West European (WESTE), respectively. Alternatively, these two can be combined for form a Euro area dummy. The GROSSK can alternatively be expressed as a percentage of GDP (measured in national currencies) in order to make it comparable across countries and years.

The included linear time trend used to capture time varying technology and policy effects can be strengthened to include the square of time trend and possibly time trends interaction with some other explanatory variables to capture possible non-linearity and non-neutrality in unobservable time-variant policy effects. If available, the variable GROSSK could ideally be measured in a unique currency, such as international dollars, and in purchasing power parity (PPP). In this paper, because of a lack of data, we use the former definition.

Insert Table 1 about here

The summary statistics of the data are presented in Table 2. The data is an unbalanced panel data and has a maximum number of 997 observations. The differences in the number of observations (N) by included variables indicate the presence of a significant number of missing unit data points. In particular, data is not available for several East European countries for the 70s and beginning of the 80s. We retained the missing observations in the data prior to the estimation to provide a better picture of the distribution of each of the labor market indicators.

Insert Table 2 about here

The mean sample unemployment rate is 6.1% (3.9%) and it varies in the interval of 0.003 and 24.5% of the labor force. The number in parenthesis is the standard deviation. The share of countries with minimum wage law is only 27.8%. The constrained bargaining rate varies within the interval of 0.10 and 2.0 with a sample mean of 1.09 (0.56).

The cost shifting variables show in general more variations. The mean number of days worked prior to being qualified for receiving unemployment benefit is 51.6 (46.6) days. This varies within the range of 0 days and 208 days. The dispersion in unemployment benefit duration is significantly higher. The mean sample is 211.5 (342.4) days. This varies within the interval of 18 and 999 days. The upper level seems to indicate an unlimited length of duration. The average number of waiting days before receiving unemployment benefit is 4.8 (4.8) days and this varies between 0 and 18 days. Similarly, we observe significant variations in the generosity of both unemployment and sickness benefit systems among the sample countries. The mean (standard deviation) are 7.39 (2.72) and 8.38 (3.90) respectively.

The time trend variable shows that the countries are on average observed 18 years and each between 1 and 34 years. The low frequency of observation is attributed to the East European countries. On average, 29.5% (6.3%) of the workforce is employed in the industries. The share varies within the interval of 9.9% and 48.4%, indicating a

large difference in the degree of industrialization. The mean total business ownership rate is 14.8% (5.9%) and varies within the range of 6.3% and 28.4%. The investment rate as a percentage of real GDP per employee is 23.9% with a relatively small dispersion (4.5%), although the range is within the interval of 13.4% and 41.0%. A total of 21.7% of the sample data is from Scandinavian countries. The corresponding values for West European and other countries are 49.4% and 28.9%, respectively.

## 5 Empirical Model

The aim of this article is to analyze the effects of state neutrality and intervention in the labor market, more specifically its effects on unemployment in OECD. The unemployment model is specified as a function of the determinants of unemployment with reference to state neutrality and economic and country specific variables as follows:

$$UE_{it} = \alpha_0 + \alpha_1 GOVINT_{it} + \alpha_2 MWLAW_{it} + \beta EP_{it} + \sum_k \gamma_k COSTSHIFT_{kit} + \sum_m \delta_m ECSV_{mit} + u_{it} \quad (1)$$

where UE is the rate of unemployment for country  $i$  in period  $t$ , GOVINT and MWLAW are indicators of government intervention in the form of involvement in wage formation and introduction of minimum wage law, EP is constrained bargaining, COSTSHIFT is a vector of variables capturing cost shifting from employees to employers, ECSV is a vector of economic and country specific variables or alternatively a synthetic composite indicator capturing heterogeneity in labor market conditions, and  $u$  captures unobservable effects, effects of left out variables and measurement error in the unemployment rate. The  $\alpha, \beta, \delta, \gamma$  are unknown parameters to be estimated which capture the effects of state intervention, constrained bargaining, cost shifting and conditioning economic and welfare variables, respectively. Thus, the impacts of government involvement, constrained bargaining and cost shifting effects are analyzed conditions on the economic and country heterogeneity. By controlling for these conditional variables we reduce the size of unobservable effects and also avoid the biased estimated effects of the first categories or determinants of interventions on the rate of unemployment.

## 6 Empirical Results

Five models are specified and estimated by ordinary least squares method. We have controlled the time and country effects in the specification of the models. The empirical results are presented in Table 3. Some of the 5 models are nested in respect to their specification. Models 1-4 are restricted and unconditional versions of the general Model 5. They are unconditional in the sense that the effect of each category is analyzed by ignoring the effects of the remaining categories of variables. In general, the choice of appropriate model could be based on the Chow test using the residual sum of square or  $R^2$  from the 5 models. However, due to the missing unit observations, the 5 models despite being related differ in the number of observations and thereby it is not possible to test them against the general model. The four restricted models (Model 1 to 4) are not nested and are interpreted individually with respect to the variable categories

contribution to the explanation of the variations in the rate of unemployment and fit of the models. We find the general Model 5 as the appropriate model specification and use the remaining 4 models to quantify the contribution of each variable category reflected in the differences in the models'  $R^2$  levels. In all models, we control the labor market model (Scandinavian, West European, and Other country groups). In all models, the 'Other' country group serves as the reference country group.

Insert Table 3 about here

The first model includes the first kind of non-neutrality Government involvement and analyzes the effect of direct government involvement (GOVIN) in the wage bargaining process as well as the effects of minimum wage laws (MWLAW). As can be observed, GOVIN shows a negative and statistically insignificant effect on unemployment. MWLAW, on the other hand, displays a positive and significant effect; countries with minimum wage laws display higher unemployment on average. The countries with minimum wage have on average a 0.84% higher unemployment rate than those without. The West European group does not differ from the 'Other' countries group, but the Scandinavian labor market model is found to be superior and it shows a lower average (-1.8%) unemployment rate compared with the reference group 'Other' countries.

As mentioned earlier, Model 2 includes one variable, Employment protection, which represents the second kind of non-neutrality, *constrained bargaining range*. The employment protection variable shows, as expected, a negative but insignificant effect on unemployment. It is statistically significant only at the 13 percent level. Consequently, this model – or category – alone cannot explain variations in the rate of unemployment. In this model, both of the West European and Scandinavian groups differ statistically from the 'Other' countries group. The Scandinavian labor market model is found on average to have 1.1% lower unemployment than the 'Other' country group, while the corresponding value for the West European group is 1.7% higher rate of unemployment.

Model 3, furthermore, represents the third category of non-neutrality *Cost shifting*. Here, three out of five variables show statistically significant effects on unemployment. Unemployment qualification (UEQUAL) and unemployment duration (UEDUR) have no effects. This means that the qualification period and the duration of benefit have no effect on unemployment. Considering all of the above, we expected the former to reduce the rate of unemployment, while the latter to increase it. The unemployment waiting time (UEWAIT) along with unemployment (UEMPLY) and sickness (SICKNESS) – the last two variables measuring the overall generosity if unemployed or sick – are statistically significant here. We expected a negative relationship between UEWAIT and unemployment rate but a positive relationship between UEMPLOY and SICKNESS. Particularly, waiting time and sickness benefit generosity shows interesting relationships since the two variables, contrary to the assumptions in the model, are positive and negative, respectively. This would mean that longer waiting time increases unemployment rate and more generous systems in sickness lowers the unemployment level. This seems counter-intuitive given our hypothesis about neutrality and cost shifting. However, it could be interpreted as a transfer effect: those unemployed for a longer period of time with little or no prospects of recovering become defined as sick or as early retired. This lowers unemployment since sickness by definition is not treated as unemployment. For every day of extension in the waiting time, the unemployment rate increases by 0.29%. An increase in the unemployment

generosity scale increases the unemployment rate by 0.20%, while the corresponding change in the sickness benefits reduce unemployment rate by 0.23%, *ceteris paribus*. The Scandinavian (1.8%) and West European (3.7%) countries have on average a higher unemployment rate.

Model 4 includes policy-, incentive- and country-related control variables. Nearly all of the variables show significant effects on the rate of unemployment. The coefficient of time trend is positive and statistically significant suggesting that on average unemployment is increasing by 0.055% every year. The rate of unemployment is a negative function of the share of employment in industries. For every percentage increase in an industry's employment share, the unemployment declines by 0.26%. Private business ownership increases the unemployment rate. An increase in investment rate as a share of GDP by 1% reduces unemployment by 0.32%. An increased gross fixed capital formation also reduces the unemployment rate. West Europeans have on average lower unemployment (2.1%) compared to the reference group.

Finally, Model 5 (full model) includes all our categories. The full model does not indicate that direct government involvement has any statistically significant effect on unemployment. The introduction of minimum wages, however, results in a 1.4% increase in unemployment. Consequently, in some instances, non-neutrality in the form of *Government involvement* in the labor market and in the wage bargaining process increases unemployment and thus hampers economic efficiency.

Furthermore, non-neutrality in the form of *constrained bargaining range* – here measured as the degree of employment protection – displays a similar effect. It increases unemployment by 1.9%. Thus, the extent to which the labor market's parties can freely negotiate and come to an agreement without state involvement in this regard has a clear effect on the unemployment level.

Finally, the last category of non-neutrality, *Cost shifting* shows in the full model a number of interesting effects. Some variables now become significant and/or received reversed signs. Now, unemployment qualification, the time needed to qualify for benefit, becomes statistically significant. This means that longer qualifying waiting periods lower the unemployment. Unemployment duration and waiting time do not show any effects on unemployment, but unemployment and sickness benefits each have an unexpectedly negative effect on unemployment. Unemployment benefit has a significantly stronger effect than sickness benefit. The unemployment and sickness benefit indicators clearly show that more generous systems, where the degree of non-neutrality in the form of cost shifting is high – indicating that the key direct or indirect burden of costs for the parties on the labor market, or a third party, are higher – has a clear effect on unemployment. However, the effect is clearly negative, which means that on average, a higher level of cost shifting and non-neutrality reduces unemployment, and hence improves economic efficiency. However, the same caveats as mentioned above still apply.

The coefficient of time trend is positive and statistically significant, indicating that unemployment is increasing by 0.20% every year. The rate of unemployment is a negative function of the share of employment in industries and the share of private business ownership. For every percentage increase in these variables share the unemployment declines by 0.12%. An increase in investment rate as a share of GDP by 1% reduces unemployment by 0.3%. An increased gross fixed capital formation also reduces the unemployment rate. West European and Scandinavian countries have on average 0.60% and 0.63% lower unemployment, respectively, than the reference group

of 'Other' countries, although both are statistically insignificant. In terms of geographical variables, the two dummies for Scandinavia and Western Europe included to capture labor market models, are not statistically significant in the full model but they are significant in the restricted models. In substitution, one may include a variable for the Euro area to capture the areas' monetary policy which can be quite important to labor market outcomes, because it generally affects production levels. The Euro area dummy variable was found insignificant (the coefficient and p-value are -0.6162, 0.2180).<sup>9</sup>

In Appendix 2, we provide the correlation matrix of the variables used. We note a number of cases of multicollinearity in the data. Most of the explanatory variables are correlated with each other in a statistically significant way but at a lower level than 0.50, but the correlation coefficient in some cases is higher than 0.5, indicating a collinearity problem. It should be noted that correlation between State involvement indicators is not surprising, because some types of intervention are generally adopted simultaneously, while others could be mutually exclusive for governments. Across the different models (Model 1 through Model 5) estimated, some of the estimated parameters change sign while remaining statistically significant. This is the case of the variable EP (employment protection), UEMPLOY (unemployment generosity) and TOTRATE (total business ownership rate) among the control variables. UEWAIT (waiting time) and UEDUR (benefit entitlement) also change signs across the regressions but are not statistically significant in the full final model (Model 5). Unfortunately, this undermines the robustness of the results, and probably it explains why some of the variables have unexpected estimated effects.

There are different solutions for the problem of collinearity. Following the suggestion by the referee, we adopt two such approaches. First, one can build synthetic indicators, in order to conflate some of the original indexes in a lower number of explanatory variables. Principal components or factor analysis could be used in this case to estimate policy models with synthetic indicators which are orthogonal and therefore uncorrelated by construction. A second solution could be to consider a first-difference model, in which both right hand and left hand variables are first-differentiated. In this way, one might be able to avoid collinearity. It also allows us to capture in a better way the relation between unemployment variability and State intervention variability. Any of these two solutions or instrumental variable techniques to avoid the endogeneity problem would probably be an improvement over Models 1 to 5. However, the instrumental variable techniques to avoid endogeneity problems is a more complicated solution and not undertaken here to save degrees of freedom.

The results from Model 6, which is based on the principal component analysis where the abovementioned five indicators form a synthetic composite indicator (PRIN12), are similar in sign and significant with those in the restricted and unrestricted models, except with the signs of the two geographical dummies which change to become positive. The index PRIN12 is constructed as a weighted average of the two first principal components, where the weights are the shares (0.4203 and 0.2469) of the total variance (0.6672) explained by each of the two principal components with eigenvalues greater than 1 (2.1016 and 1.2345). The coefficient of the composite index is positive (1.3793) and highly significant. It should be noted that the new indicator PRIN12

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<sup>9</sup> In order to conserve space, not all results are reported here. However, these can be obtained from the corresponding author upon request.

reduces the dimensionality problem however its interpretation is difficult. The criterion for the selection of the variables included in the PCA is that they show some degree of collinearity. However, this choice makes it difficult to interpret economically the new synthetic indicator obtained from the PCA, the variable called PRIN12. It should be composed of indicators with same effects else it is rather difficult to understand whether the estimated effect support the theoretical argument or not. In this case the estimated effect of PRIN12 on the dependent variable is dominated by the effect of its TOTRATE component and not fully able to capture the effect of the government neutrality variables.

The model based on the first difference transformation (Model 7) resulted in insignificant parameter estimates with the exception of INDUST, TOTRATE and KI, all three of which are negative and statistically significant. The signs of these three variables compared with those of the general Model 5 remain the same, suggesting that multicollinearity did not cause major changes in the sign and significance across different model formulations. However, since the relevant estimated coefficients are not statistically significant, unfortunately the expected results did not come out.

## **7 Summary and conclusions**

The empirical results are based on data for 18 OECD countries observed during 1970-2003. We identify three types of non-neutrality concerning unemployment. These include the level or degree of government involvement in the wage bargaining process over and above legislation which facilitate mutually beneficial wage agreements (and thus preventing certain outcomes in the interest of some parties), the constrained bargaining range (meaning the extent to which the state favors or blocks certain outcomes of the bargaining process), and the cost shifting (which relates to state interference shifting the direct or indirect burden of costs facing the parties on the labor market). Our overall hypothesis is that non-neutrality or non-generality increases unemployment rates.

The empirical results from the general conditional model suggest that non-neutrality government intervention and a constrained bargaining range at least by some measure increase unemployment, while a few of the cost shifting variables have unexpected effects. The findings based on comprehensive sensitivity analysis concerning definition of variables and specification of models thus give some, but not unreserved, support for the generality principle promoting impartiality and state neutrality as a method to promote economic efficiency.

The conclusions here is not fully convincing as we find only partial evidence in favour of the conjecture.<sup>10</sup> As such, any inference or judgement will be based on inconclusive or incomplete evidence. The evidence of partial support for generality principle is robust, but in order for this statement to be considered as true further research is required to prove the hypothesis of state neutrality. Thus, it is interesting to investigate implications of these results for the more general universalizability conjecture. A deeper investigation into this problem will shed lights on issues of local approximations limitations to entail universalizability of concep. However due to limited space, this issue is beyond the scope of this paper.

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<sup>10</sup> The authors wish to thank an anonymous referee for pointing out this issue.

In our view one implication of our result may be that the principle should be amended by other local requirements if the political process shall indeed be able to promote economic efficiency. However, this is a new conjecture and much different from the one described above. The possible content of such an amendment must be made more specific. Again, this require further study and therefore beyond the scope of this study.

The use of sample of countries with developed labor market institutions is expected to support the state neutrality principle. However, diversity in form, evolution and function of the labor market institutions, enforcement of the neutrality principle and the long period of time suggest a different approach is required to test the generality principle. Access to better and harmonized data covering a larger sample of countries, accounting for various forms of heterogeneity, different types of non-neutrality and better separation of observable and unobservable country/sector effects my lead to stronger support for the principle in the area of labor market regulations.

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**Table 1** The unemployment model structure.

Variable category	Variable name	Definition
<b>A. Dependent variable:</b>	UE	Unemployment rate
<b>B. Independent Variables:</b>	GOVIN	Government involvement index
I. Government involvement		
	MWLAW	Minimum wage law
II. Constrained bargaining range	EP	Employment protection
III. Cost shifting	UEQUAL	Unemployment qualification condition
	UEDUR	Unemployment benefit duration
	UEWAIT	Unemployment benefit waiting
	UEMPLY	Unemployment benefit generosity
	SICKNESS	Sickness benefit generosity
<b>C. Control variables:</b>		
IV. Economic and Country Specific Variables		
	INDUST	Labor force industry (%)
	T	Time trend
	TOTRATE	Total business ownership rate
	KI	Investment % of real GDP
	GROSSK	Gross fixed capital
	SCAND	Scandinavia
	WESTE	Western Europe

**Table 2** Summary statistics of the data.

Variable	Definition	N	Mean	Std Dev	Minimum	Maximum
Year	Year of observation	997	1987	9.8406	1970	2003
UE	Unemployment rate	620	6.128	3.867	0.003	20.151
GOVIN	Government involvement index	493	5.834	3.635	1.000	15.000
MWLAW	Min wage law=1	558	0.278	0.448	0.000	1.000
EP	Employment protection	575	1.092	0.565	0.100	2.000
UEQUAL	Unemployment qualify. condition	574	51.563	46.595	0.000	208.000
UEDUR	Unemployment benefit duration	574	211.465	342.395	18.000	999.000
UEWAIT	Unemployment benefit waiting	575	4.774	4.845	0.000	18.000
UEMPLY	Unemployment generosity	576	7.386	2.716	1.016	12.974
SICKNESS	Sickness generosity	574	8.384	3.901	0.000	15.657
T	Trend	740	18.329	9.715	1.000	34.000
INDUST	Labor force in industry (%)	558	0.295	0.063	0.099	0.484
TOTRATE	Total Bus Own rate	736	0.148	0.059	0.063	0.384
KI	Investment % of real GDPL	558	23.877	4.536	13.441	41.022
GROSSK	Gross fixed capital (in 1000)	558	54.203	23868.065	0.488	149020.400
SCAND	Scandinavia	740	0.217	0.413	0.000	1.000
WESTE	Western Europe	740	0.494	0.500	0.000	1.000
PRIN12	Weighted Principal Components	483	0.000	0.731	-1.160	1.665

**Table 3** Fixed effects regression results.

		MODEL 1		MODEL 2		MODEL 3		MODEL 4		MODEL 5		MODEL 6		MODEL 7	
Category	Variable	Estimate	Pr >  t	Estimate	Pr >  t	Estimate	Pr >  t	Estimate	Pr >  t	Estimate	Pr >  t	Estimate	Pr >  t	Estimate	Pr >  t
	Intercept	6.7983	0.001	6.8199	0.001	3.2666	0.001	17.2645	0.001	19.3547	0.001	14.0723	0.001	0.0960	0.017
I. Government involvement	GOVIN	-0.0286	0.469	.	.	.	.	.	.	-0.0184	0.516	-0.0581	0.032	0.0017	0.905
	MWLAW	0.7756	0.028	.	.	.	.	.	.	1.5044	0.001	1.5637	0.001	.	.
II. Constrained bargaining range	EP	.	.	-0.7859	0.031	.	.	.	.	1.9213	0.001	.	.	-1.4782	0.137
III. Cost shifting	UEQUAL	.	.	.	.	-0.0012	0.754	.	.	-0.0132	0.001	-0.0064	0.022	-0.0024	0.546
	UEDUR	.	.	.	.	0.0003	0.533	.	.	-0.0001	0.928	.	.	0.0002	0.668
	UEWAIT	.	.	.	.	0.2903	0.001	.	.	-0.0285	0.433	.	.	0.0015	0.975
	UEMPLY	.	.	.	.	0.1972	0.003	.	.	-0.4218	0.001	.	.	-0.0840	0.313
	SICKNESS	.	.	.	.	-0.2331	0.001	.	.	-0.1739	0.005	-0.0782	0.087	-0.1296	0.113
IV. Economic variables	T	.	.	.	.	.	.	0.0546	0.002	0.1920	0.001	0.1836	0.001	.	.
	INDUST	.	.	.	.	.	.	-25.8605	0.001	-11.7347	0.001	-8.2022	0.020	-12.9183	0.001
	TOTRATE	.	.	.	.	.	.	14.9376	0.001	-11.3371	0.050	.	.	-24.5996	0.006
	KI	.	.	.	.	.	.	-0.3155	0.001	-0.2964	0.001	-0.3160	0.001	-0.2838	0.001
	GROSSK	.	.	.	.	.	.	-0.0001	0.062	-0.45 E-5	0.001	-0.34 E-5	0.001	-0.32 e-8	0.883
	SCAND	-1.7858	0.001	-1.0723	0.063	1.7732	0.015	0.3460	0.322	-0.6344	0.272	0.8235	0.106	.	.
	WESTE	-0.4863	0.203	1.6759	0.001	3.6696	0.001	2.0828	0.001	-0.6078	0.240	0.7924	0.031	.	.
	Prin12											1.3793	0.001	.	.
	R-Square	0.0941		0.0942		0.2638		0.5676		0.7046		0.6666		0.3653	
	Obs.	431		509		473		464		371		371		404	
	RMSE	2.9880		3.6641		2.9240		2.2340		1.6889		1.7577		0.7452	

Notes: Countries: AUS, AUL, BEL, CAN, DEN, FIN, FRA, GER, IRE, ITA, JPN, NET, NOR, NZL, SWE, SWI, UK, USA

Prin12 in Model 6 a weighted average of 1<sup>st</sup> and 2<sup>nd</sup> principal components based on EP, Uemploy, Totalrate, Uewait, Uedur. The weights are the share of variance explained the each of the first 2 components.

Model 7 is similar as model 5 but the dependent and independent variables are transformed to first difference. The dummy variables and time trend are eliminated following the transformation.

**Appendix 1** Variables and sources of data.

Code	Variable	Explanation	Source
GOVIN	government involvement index	Index of government involvement in wage-setting. Coding as follows: 1. Government uninvolved in wage setting 2. Government establishes minimum wage(s) 3. Government extends collective agreements 4. Government provides economic forecasts to bargaining partners 5. Government recommends wage guidelines or norms 6. Government and unions negotiate wage guidelines 7. Government imposes wage controls in selected industries 8. Government imposes cost of living adjustment 9. Formal tripartite agreement for national wage schedule without sanctions 10. Formal tripartite agreement for national wage schedule with sanctions 11. Government arbitrator imposes wage schedules without sanctions on unions 12. Government arbitrator imposes wage national wage schedule with sanctions 13. Government imposes national wage schedule with sanctions 14. Formal tripartite agreement for national wage schedule with supplementary local bargaining prohibited 15. Government imposes wage freeze and prohibits supplementary local bargaining	Golden et al.
MWLAW	Min wage law=1	Minimum wage law = 1; 0 if otherwise.	Nickell and Nunziata
EP	Employment protection	Captures the strictness of employment protection laws. 0 low, 2 high.	--,--
UEQUAL	Unemployment qualification condition	Number of weeks of insurance needed to qualify for benefit. Where ambiguous, the qualifying condition consistent with the coding for replacement rate and duration of benefit has been used.	Scruggs
UEDUR	Unemployment benefit duration	Number of weeks of benefit entitlement. This excludes periods of means-tested assistance. When this varies, it has been assumed that the worker is aged 40 years and has paid insurance for 20 years.	--,--
UEWAIT	Unemployment waiting	Number of days one must wait to start receiving benefit after becoming unemployed.	--,--
UEMPLOY	Unemployment generosity	Overall generosity score	--,--
SICKNESS	Sickness generosity	Overall generosity score	--,--
T	Trend	Trend/time	
INDUST	Labor force in industry (%)		Huber et al.
TOTRATE	Total Bus Own rate	Total Business ownership rate/labor force	Van Stel
KI	Investment % of RGDPL		Huber et al.
GROSSK	Gross fixed capital		--,--
SCAND	Scandinavia	Binary	
WESTE	Western Europe	Binary	

Prin12	Principal components	Weighted average of 1 <sup>st</sup> and 2 <sup>nd</sup> principal components (based on EP, Uemploy, Totalrate, Uewait, Uedur)	Own estimation
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**Appendix 2** Pearson correlation matrix.

	UE	GOVIN	MWLAW	EP	UEQUAL	UEDUR	UEWAIT	UNEMPLOY	Sickness	Trend	Industry	Total Rate	KI	GROSSK	SCAND	WESTE	PRIN12
UE	1.00																
GOVIN	0.02	1.00															
MWLAW	0.21a	-0.12a	1.00														
EP	-0.01	0.17a	-0.14a	1.00													
UEQUAL	0.02	-0.08c	0.04	0.37a	1.00												
UEDUR	0.02	0.43a	-0.04	-0.12a	-0.29a	1.00											
UEWAIT	0.32a	-0.13a	-0.03	-0.52a	-0.37a	0.12a	1.00										
UNEMPLOY	-0.05	0.16a	0.26a	0.07	-0.03	-0.06	-0.36a	1.00									
Sickness	-0.25a	0.23a	-0.24a	0.61a	-0.30a	-0.14a	-0.60a	0.51a	1.00								
Trend	0.47a	-0.07	0.00	0.05	0.10b	0.01	0.00	0.20a	0.04	1.00							
Industry	-0.58a	-0.09b	-0.34a	0.22a	0.27a	-0.17a	-0.27a	-0.28a	0.18a	-0.63a	1.00						
Total Rate	0.20a	0.17a	-0.18a	0.21a	-0.13a	0.31a	0.38a	-0.61a	-0.44a	-0.11a	-0.08c	1.00					
KI	-0.56a	0.04	-0.16a	0.38a	-0.02	-0.12a	-0.23a	-0.09b	0.22a	-0.20a	0.30a	0.07	1.00				
GROSSK	-0.19a	-0.12a	-0.13a	0.16a	-0.12a	-0.12a	0.10b	-0.25a	-0.18a	0.32a	0.13a	0.10b	0.40a	1.000			
SCAND	-0.26a	0.23a	-0.39a	0.18a	-0.24a	-0.15a	-0.19a	0.42a	0.60a	-0.02	-0.07c	-0.31a	0.32a	-0.04	1.00		
WESTE	0.24a	-0.15a	0.13a	0.38a	0.57a	-0.26a	-0.33a	-0.11b	0.07c	-0.06	0.30a	0.28a	-0.12a	-0.22a	-0.52a	1.00	
PRIN12	0.16a	0.10b	-0.26a	0.04	0.09b	0.36a	0.45a	-0.84a	-0.49a	-0.13a	-0.04	0.92a	0.08c	0.19a	-0.37a	0.05	1.00

Note: Significant at the less than 1% (a), 1-5% (b), 6-10% (c) levels of significance.