Ochsen, Carsten; Welsch, Heinz

Working Paper

Labor market institutions: Curse or blessing?

Thünen-Series of Applied Economic Theory - Working Paper, No. 62

Provided in Cooperation with:
University of Rostock, Institute of Economics

Suggested Citation: Ochsen, Carsten; Welsch, Heinz (2006) : Labor market institutions: Curse or blessing?, Thünen-Series of Applied Economic Theory - Working Paper, No. 62, Universität Rostock, Institut für Volkswirtschaftslehre, Rostock

This Version is available at:
https://hdl.handle.net/10419/39729

ISSN 1431-4118

Thünen-Series of Applied Economic Theory

Thünen-Reihe Angewandter Volkswirtschaftstheorie

Working Paper No. 62

Labor Market Institutions: Curse or Blessing?

by

Carsten Ochsen and Heinz Welsch

Universität Rostock
Wirtschafts- und Sozialwissenschaftliche Fakultät
Institut für Volkswirtschaftslehre
2006

Labor Market Institutions: Curse or Blessing?

Carsten Ochsen[a)]
Heinz Welsch[b)]

Abstract

Previous literature has identified considerable non-pecuniary costs to macroeconomic fluctuation and uncertainty. The present paper investigates whether and to what extent labor market institutions can mitigate those costs. We study how life satisfaction of European citizens is affected by employment protection and the level and duration of unemployment benefit payments. We differentiate between direct effects (at given macroeconomic conditions) and total effects (including the feedback through the institutions' effect on macroeconomic outcomes). We find that the total effect of employment protection is positive, whereas the total effect of benefit duration is negative. The direct and indirect effects of a higher benefit level nearly neutralize each other.

JEL classification: J30, E24, E60, D71, I31

Keywords: unemployment benefit; employment protection; macroeconomic uncertainty; cost-benefit analysis; life satisfaction; happiness

[a)] Department of Economics, University of Rostock, 18057 Rostock, Germany; e-mail: carsten.ochsen@uni-rostock.de

[b)] Department of Economics, University of Oldenburg, 26111 Oldenburg, Germany; e-mail: heinz.welsch@uni-oldenburg.de

1. Introduction

Employment protection and unemployment benefit are economic institutions designed to protect people against the adverse effects of macroeconomic uncertainties that arise from recession, unemployment or inflation. These labor market institutions have a long tradition in many European countries and are widely viewed as essential ingredients of the "welfare state". However, they have recently come under attack for being too costly. Moreover, they are implicated with jeopardizing macroeconomic performance, especially by raising unemployment. There is thus a proposition that certain labor market institutions aggravate those problems whose consequences they are designed to mitigate.

Critical views of employment protection and unemployment benefit do, in general, not mean to imply that these institutions are detrimental *per se*. Rather, the idea seems to be that, while beneficial at low levels, protection and support have become excessive over the decades, such that their (marginal) benefit is now negative. The purpose of this paper is to study this proposition by examining the linkage between labor market institutions and life satisfaction in a number of European countries. Our approach takes into account possible feedback through the institutions' impact on macroeconomic outcomes. If we find a negative overall relationship, this may be taken as evidence that protection and support are excessive. If the relationship is positive or insignificant, there doesn't seem to be a need for cutting back on these institutions.

Whether or not labor market institutions conform to their stated objectives depends on a number of circumstances. In the first place, protection against macroeconomic uncertainties is valuable only if these uncertainties have a non-negligible effect on citizens' welfare. Whether this is the case has been subject to controversy for a quarter of a century. As suggested by Fischer (1981) and Lucas (1981), the consequences of (short-term) fluctuations may be small in comparison with long-term growth. Especially, eliminating all macroeconomic fluctuations has been estimated to be worth merely 0.05 percent of consumption (Lucas 2003).

Criticism against this view has been raised on the grounds that it neglects important phenomena that are relevant to an adequate notion of welfare, like loss aversion and, especially, non-pecuniary effects of fluctuation and uncertainty (Layard 2005). Using data from large scale surveys, evidence has been presented that individual welfare -- operationalized by subjective well-being (happiness, life satisfaction) -- is to a considerable extent negatively related to recession, unemployment and inflation (Di Tella et al. 2001, Graham und Pettinato 2001, Bjørnskov 2003, Welsch 2006). These findings suggest that there

are considerable (non-pecuniary) costs to macroeconomic fluctuation and uncertainty.

Given that evidence, the present paper investigates whether and to what extent labor market institutions can mitigate those costs. More specifically, we study how life satisfaction is affected by employment protection and unemployment benefit. While these effects may be thought to be unambiguously positive, this is not necessarily true: Though these institutions are likely to yield positive "gross utility", their net effect depends, in addition, upon their "costs" (if present), in terms of tax payments, social security contributions and similar burdens. The sign of the relationship between life satisfaction and labor market institutions is thus not self-evident. It may be different for "costly" and (seemingly) "costless" institutions.

The relationship just discussed presupposes given levels of the macroeconomic indicators and can be referred to as the direct relationship. In addition, however, labor market institutions may impact on macroeconomic performance. For instance, there is some literature investigating whether patterns of unemployment can be explained by variations in labor market institutions (see Nickell 2003 for a discussion). Through such channels, labor market institutions can affect life satisfaction in an indirect way. As above, the sign of the indirect linkage is unknown a priori, and it may differ with respect to both, the specific type of institution and the specific macroeconomic indicator.

Given these possible channels of influence, the paper measures both the direct as well as the total (direct and indirect) linkage of life satisfaction to employment protection and the level and duration of unemployment benefit payments. Using data for almost 45,000 individuals in 10 European countries, 1992-1998, we run ordered probit regressions with self-reported life satisfaction as the dependent variable and labor market institutions among the explanatory variables (controlling for individual socio-demographic characteristics and country fixed effects as well as country specific time trends). By estimating model versions that include and versions that omit macroeconomic indicators, we are able to estimate the direct as well as the overall relationship between life satisfaction and labor market institutions.

In addition to confirming the common finding that poor macroeconomic performance affects life satisfaction in a sizeable and significant way, we obtain several intriguing results: (1) The labor market institutions considered reduce the adverse effect on life satisfaction of poor macroeconomic performance. (2) The direct linkage of life satisfaction to employment protection is positive (reflecting the circumstance that employment protection has little direct costs), whereas the direct relationship of life satisfaction to unemployment benefit (level and duration) tends to be negative (reflecting the costs in terms of tax payments and social security contributions). (3) The overall linkage of life satisfaction to employment protection is

positive, though of a smaller magnitude, whereas the overall relationship of life satisfaction to benefit duration is unambiguously negative and of a larger magnitude than the direct relationship. (4) The overall relationship of life satisfaction to the benefit level is insignificant, but may be slightly positive. (2) and (3) jointly suggest that employment protection and benefit duration affect macroeconomic performance negatively (by reducing the adjustment flexibility on the supply side). (2) and (4) jointly suggest that a higher benefit level may enhance macroeconomic performance (possibly by stabilizing aggregate demand).

The previous literature has addressed the various relationships between macroeconomic performance, life satisfaction, and labor market institutions from several perspectives. As mentioned above, it is by now a standard result that macroeconomic performance affects life satisfaction (Di Tella et al. 2001, Graham und Pettinato 2001, Bjørnskov 2003, Welsch 2006). In addition, evidence has been presented of a positive relationship between the level of unemployment benefit and life satisfaction (Di Tella et al. 2003, Graham und Pettinato 2001). Furthermore, the relationship between labor market institutions and labor market outcomes has been studied, results tending to be inconclusive (Layard et al. 1991, Blanchard and Wolfers 2000, Fitoussi et al. 2000, Belot and van Ours 2001, Bertola et al. 2002, Nickell et al. 2005; for an overview and discussion see Nickell 2003).

The present paper focuses on the linkages between labor market institutions and life satisfaction. In relation to the few previous studies on this subject, our contribution is as follows: (1) We use a more recent data set that reflects current labor market institutions more accurately. (2) We consider a more comprehensive set of labor market institutions and distinguish between costly institutions (unemployment benefit) and seemingly costless institutions (employment protection). (3) We base our empirical analysis on a conceptual distinction between direct and indirect linkages of life satisfaction to labor market institutions. Overall, our analysis provides a differentiated and comparatively up-to-date benefit-cost assessment of labor market institutions in Europe.

The paper is organized as follows. Section 2 sketches the conceptual framework of our empirical analysis. Section 3 presents the data and the empirical approach. Section 4 presents and discusses the results. Section 5 concludes.

2. Conceptual Framework

This section introduces a stylized representation of the hypothesized relationships between labor market institutions and well-being.

We consider two types of labor market institutions, employment protection, *P*, and unemployment benefit, *B*. In the empirical part, *B* will be differentiated into the level and the duration of benefit payments. Moreover, we introduce a notional variable that captures macroeconomic performance, *M*. This variable is taken to represent macroeconomic performance in an inverse fashion and will thus be referred to as *malaise*. Empirically, it comprises unemployment, inflation, and slow (or negative) growth. Finally, we denote well-being (to be operationalized by self-reported life satisfaction) by *W*.

We hypothesize that labor market institutions, macroeconomic outcomes, and well-being are connected through several partial relationships. On the one hand, the institutions yield (gross) utility *U(P, B)*, where the function is assumed to be differentiable, with positive partial derivatives: $U_P > 0$, $U_B > 0$. On the other hand, there may be costs associated with these institutions, especially due to tax payments and social security contributions. These are captured by *C(P, B)*, where $C_P \geq 0$, $C_B > 0$ are expected. With respect to C_P, we actually deem it likely to be zero, since there are few generally recognized direct costs of employment protection. For ease of exposition we assume that *U* and *C* are commensurable in the sense that they can be combined to yield net utility associated with *P* and *B*, that is, *U(P, B) – C(P, B)*.

In addition to their impact on utility, labor market institutions may affect macroeconomic outcomes. Symbolically, this is captured by *M(P, B, Z)*, where *Z* represents determinants of macroeconomic performance other than *P* and *B*. We do not have specific expectations as to the partial derivatives M_P and M_B, especially since *M* has several dimensions which may be affected differently by the institutions.

The model is completed by stipulating an increasing function *V(M)* which represents the well-being costs of macroeconomic malaise.

Disregarding other determinants of well-being at this point, the relationships just discussed are combined to yield well-being, as follows:

$$W = F(P, B, M) := U(P, B) - C(P, B) - V(M) \tag{1a}$$

$$M = M(P, B, Z) \tag{1b}$$

The set of equations (1a) and (1b) represents the structural form of the conceptual model. By inserting (1b) into (1a) the reduced form is obtained:

$$W = G(P,B,Z) := U(P,B) - C(P,B) - V\left(M(P,B,Z)\right) \tag{2}$$

With regard to the empirical implementation, two points should be observed. First, it will not be possible to identify *U(P, B)* and *C(P, B)* separately. Rather, we will focus on net well-being *U(P, B) - C(P, B)*. Second, we will not explicitly address the macroeconomic effects of labor market institutions, as captured in (1b).

In spite of that, by focusing on (1a) and (2), we will be able to differentiate between the direct (net) well-being effects and the overall (direct and indirect) well-being effects of labor market institutions. This can be seen as follows. Differentiating (1a) and (2), respectively, one obtains:

$$dW = (U_P - C_P)\,dP + (U_B - C_B)\,dB - V_M\,dM \tag{1a'}$$

$$dW = (U_P - C_P - V_M M_P)\,dP + (U_B - C_B - V_M M_B)\,dB - V_M M_Z\,dZ \tag{2'}$$

(1a') shows that the structural-form equation (1a) yields the direct (net) well-being effects $(U_P - C_P)$, $(U_B - C_B)$ at given M. Depending on the size of U_P relative to C_P and U_B relative to C_B, the direct effect can be positive or negative.

Likewise, (2') shows that the reduced-form equation (2) yields the overall effects $(U_P - C_P - V_M M_P)$, $(U_B - C_B - V_M M_B)$, including the labor market institutions' influence on M. Evidently, the sign of the overall effects may differ from that of the direct effects, depending on the sign and magnitude of M_P and M_B. Moreover, comparing the direct and overall effects suggests how the labor market institutions might influence macroeconomic performance.

3. Method and Data

We consider a life satisfaction regression of the following form:

$$\begin{aligned} LS_{ict} = {} & \alpha_1 EP_{ct} + \alpha_2 BR_{ct} + \alpha_3 BD_{ct} + \alpha_4 UR_{ct} + \alpha_5 IR_{ct} + \alpha_6 GR_{ct} + \alpha_7 Z_{ct} \\ & + \sum\nolimits_k \beta_k D_{kict} + \gamma_0 trend_t + \sum\nolimits_c \gamma_c trend_{ct} + \delta_c + \varepsilon_{ict} \end{aligned} \tag{3}$$

in which the dependent variable, LS_{ict}, is self-rated life satisfaction of individual *i* in country *c* and year *t*. EP_{ct}, BR_{ct} and BD_{ct} are measures of employment protection, the benefit replacement rate, and benefit duration, respectively, by country and year. UR_{ct}, IR_{ct} and GR_{ct} are the unemployment rate, the inflation rate, and the growth rate, respectively, by country and year. Z_{ct} denotes indicators of macroeconomic policy (by country and year) that influence macroeconomic outcomes.[1] D_{kict} refers to the *k*th socio-demographic characteristic of individual *i* in country *c* and year *t*, whereas $trend_t$ and $trend_{ct}$ control for joint and country specific time trends.[2] Finally, δ_c are country fixed effects and ε_{ict} is the error term.

Consistent with the discussion in the preceding section, we estimate two versions of equation (3). One version sets $\alpha_7 \equiv 0$. This version, which corresponds to equation (1a), treats the macroeconomic outcomes (*UR*, *GR*, *IR*) as exogenous. It determines the relationship between life satisfaction and labor market institutions at given macroeconomic conditions and serves to measure the direct effect of labor market institutions on life satisfaction. The other version sets $\alpha_4 \equiv \alpha_5 \equiv \alpha_6 \equiv 0$, while admitting $\alpha_7 \neq 0$. This version, which corresponds to equation (2), treats the macroeconomic outcomes as functions of the labor market institutions and macroeconomic policy. It serves to measure the total effect of labor market institutions on life satisfaction, including the feedback through macroeconomic conditions. In addition, we will consider a benchmark regression that includes the macroeconomic variables only ($\alpha_1 \equiv \alpha_2 \equiv \alpha_3 \equiv \alpha_7 \equiv 0$). This benchmark version shows how macroeconomic malaise affects life satisfaction if unmitigated by labor market institutions.

Our data base covers the period 1992-1998 and refers to the following countries: Belgium, Denmark, France, Germany, Ireland, Italy, the Netherlands, Portugal, Spain and the UK.[3] The data on life satisfaction and socio-demographic characteristics are taken from the *Eurobarometer* survey series. The *Eurobarometer* survey is a representative survey of approximately 1000 persons per country (Germany: 2000).[4] Given that not all of the required

[1] Following the literature discussed in Nickell (2003) we use current and lagged values of the short-term interest rate as an indicator of monetary policy.

[2] Most of the socio-demographic characteristics are captured by category dummies (e.g. male/female). We choose time trends instead of time fixed effects, since the latter are perfectly collinear with the socio-demographic dummies.

[3] Data for (unified) Germany are not available before 1992, whereas labor market institutions are available until 1998 only.

[4] The *Eurobarometer* public opinion surveys are conducted on behalf of the European Commission, DG Press and Communication. Each consists of approximately 1000 face-to-face interviews per Member State of persons aged 15 and over.

socio-demographic characteristics are available in all years for all countries, the regressions refer to 44,644 individuals.

The life satisfaction question reads as follows: "On the whole, are you very satisfied, fairly satisfied, not very satisfied or not at all satisfied with the life you lead." The responses are rated as follows: "very satisfied" = 4, "fairly satisfied" = 3, "not very satisfied" = 2, "not at all satisfied" = 1. The socio-demographic characteristics to be included in the regression are income, age, sex, educational attainment, marital status, occupational status, number of children, and urbanization.

The data on labor market institutions are taken from Nickell and Nunziata (2002), to which the reader is referred for details. Employment protection (*EP*) is constructed on the basis of an extensive collection of employment protection dimensions. It takes the value zero in the case of no employment protection and 2 in the case of high employment protection. The benefit replacement rate (*BR*) is a percentage of average earnings before tax and refers to the first year of unemployment. Benefit duration (*BD*) is measured by the benefit replacement rate in the second to fifth year of unemployment, relative to that in the first year.[5]

Summary statistics of the life satisfaction and institution data are provided in Table A1 and A2 in the Appendix.

The rates of growth, unemployment, and inflation are taken from the EU's Annual Macroeconomic Data Base (AMECO).[6] They are entered in our data as percentages.

Given the discrete character of our dependent variable the model is estimated using an ordered probit maximum likelihood estimator (with Huber/White robust standard errors to control for heteroskedasticity). The probit model treats life satisfaction as specified by equation (3) as an unobserved, or latent, variable. The model involves threshold levels which determine how the continuous latent variable is translated into the discrete life satisfaction categories j = 1, …,4. Accordingly, the estimated coefficients from equation (3) represent marginal effects of the explanatory variables with respect to the latent variable. They are to be distinguished from the marginal probability effects MPE_{jl}, which give the marginal effect of the lth exogenous variable (e.g. employment protection) on the probability of life satisfaction category j.[7] Since the *MPE* is applicable only to continuous explanatory variables, we compute them only with respect to the macroeconomic variables and institutions.

---

[5] More specifically, Nickell and Nunziata (2002) use the following formulation for the benefit duration indicator: $BD = 0.6\,(BR_{2,3} / BR_1) + 0.4\,(BR_{4,5} / BR_1)$, where $BR_{2,3}$ and $BR_{4,5}$ denote the average benefit replacement rate in the second and third and in the fourth and fifth year, respectively.

[6] See http://europa.eu.int/comm/economy_finance/indicators/annual_macro_economic_database/ameco_en.htm.

[7] See, for example, Greene (2003) on how the *MPE* is calculated.

4. Results

Table 1 shows the main estimation results. More detailed results (especially with respect to the socio-demographic variables) are presented in Table A3 in the Appendix. The *MPE* of the macroeconomic variables and institutions are presented in Table A4.

4.1 Main Results

Regression A confirms findings from previous literature that life satisfaction is negatively and significantly linked to the unemployment and inflation rate and positively and significantly to the growth rate. Since there is a negative association between *individual* unemployment and life satisfaction (see Table A3), *general* unemployment qualifies as a social bad whose effect concerns not just the unemployed.[8]

Table 1: Main regression results, 1992 – 1998, dependent variable: life satisfaction (LS)

	(A)	(B)	(C)	(D)	(E)
employment protection		1.2001	0.5583	0.7875	0.9676
		(2.362)	(1.116)	(1.608)	(1.748)
benefit replacement rate		-0.8656	0.1873	0.2187	-0.0621
		(-1.223)	(0.281)	(0.378)	(-0.091)
benefit duration		-0.3790	-0.6970	-0.7666	-0.7981
		(-0.984)	(-2.044)	(-2.249)	(-2.314)
unemployment rate	-0.0364	-0.0071			
	(-14.971)	(-0.651)			
inflation rate	-0.0773	-0.0508			
	(-18.826)	(-1.242)			
growth rate	0.0152	0.0297			
	(4.032)	(5.120)			
interest rate			0.0029		0.0064
			(0.362)		(0.768)
lagged interest rate				0.0161	0.0181
				(1.576)	(1.707)
country fixed effects	✓	✓	✓	✓	✓
common time trend	✓	✓	✓	✓	✓
country time trend	✓	✓	✓	✓	✓
countries	10	10	10	10	10
total observations	44644	44644	44644	44644	44644
Pseudo-R^2	0.1210	0.1132	0.1127	0.1128	0.1128

[8] Especially, a high unemployment rate may create fear of losing one's job.

Regression B adds our labor market institutions to the previous regression. We find that life satisfaction is positively and significantly related to employment protection. With respect to the level and duration of unemployment benefits, however, we find negative, insignificant relationships. There is thus a marked difference between employment protection and unemployment benefits, and this difference may be related to the circumstance that the former type of institution has no direct cost in terms of social security contributions and other financing mechanisms. It is thus not surprising that employment protection raises life satisfaction. With respect to unemployment benefits, there exist costs. Given the insignificance of our coefficient estimates, the utility derived from the unemployment benefit system seems to be more or less matched by the associated costs, at the margin. This is, of course, not to say that the unemployment benefit system is useless (infra-marginal effect) or that the level and duration of unemployment benefit are excessive. Rather, a net (marginal) effect not statistically different from zero can be taken to suggest that there is no reason for significant changes, at least as far as the direct effects are concerned.

Our negative (though insignificant) coefficient estimate for the benefit replacement rate stands in contrast to the significantly positive estimate reported by Di Tella et al. (2003). However, that study refers to the 1970s and 1980s, a period in which the benefit replacement rate was in general lower than in the 1990s.[9] It is thus quite plausible that the cost burden associated with the unemployment benefit system was lower then, leading to a positive net effect, whereas the balance tends to be negative with respect to the more recent levels of benefit payments.

With respect to the macroeconomic variables, an intriguing result is that the coefficient on unemployment gets strongly reduced (in comparison with regression A) and, in fact, becomes insignificant when the labor market institutions are accounted for. The coefficient on inflation drops as well and becomes insignificant, too. Employment protection and unemployment benefit thus seem to operate rather effectively in mitigating the adverse life satisfaction consequences of general unemployment and inflation. With respect to the growth rate, however, we find its effect strengthened. A rise in prosperity is thus more beneficial than suggested when labor market institutions are disregarded. A possible explanation might be that the security provided by the labor market institutions reduces the necessity of precautionary saving that would otherwise take place in periods of expansion in order to prepare for future recession. In this sense, labor market institutions not only mitigate the detrimental effects of unemployment and inflation, but also enhance the beneficial effects of a

[9] See, for example, Nickell et al. (2005) for a discussion of labor market institutions and their developments over time.

cyclical rise in prosperity. Neglecting the labor market institutions in a life satisfaction assessment of macroeconomic conditions implies overstating the effects of (general) unemployment and inflation and understating the effect of expansion.

Regression B has been concerned with the direct relationship between life satisfaction and labor market institutions, treating the macroeconomic conditions as given. Regressions C-E capture the idea that macroeconomic conditions may be influenced by these institutions, and by macroeconomic policy. To operationalize this idea, the macroeconomic variables are omitted, and short-term interest rates are introduced (as indicators of monetary policy). These regressions differ with respect to the way the interest rate is included. Since the interest rate impacts on aggregate demand more immediately than on inflation (Nickell 2003), we experiment with current and lagged values of the interest rate. The coefficients on the labor market institutions now represent their total effect on life satisfaction, including the channel via macroeconomic performance.

Regression C includes the current interest rate. With respect to employment protection, we see that the coefficient gets reduced in comparison with regression B and becomes insignificant. This suggests that employment protection weakens macroeconomic performance (in an overall sense). The total marginal effect of employment protection on life satisfaction may thus be negligible, whereas the pure direct effect was found to be unambiguously positive. The results for the benefit replacement rate are different. While the direct effect is negative (though insignificant), the total effect is positive (but also insignificant). From the coefficient values in regressions B and C, one could derive the conjecture that a higher benefit replacement rate enhances overall macroeconomic performance. However, given the low precision of the estimates, such a statement may be not very reliable. Finally, with respect to benefit duration, the total effect is significantly negative, and its size is much larger than that of the direct effect.

The interest rate has no significant effect on life satisfaction. This is not necessarily surprising. It seems to indicate that a favorable effect on inflation and an unfavorable effect on aggregate demand cancel each other.

In regression D, which includes the lagged interest rate, the results are qualitatively similar: The coefficient on employment protection is larger than in C, but still smaller than in B, again indicating that there may be some macroeconomic cost to employment protection. The t-value is still rather low. The benefit replacement rate continues to be insignificant. Benefit duration again has a significant negative coefficient, whose magnitude is about twice as large as in regression B. Similar results are obtained when the current and lagged interest rates are

included jointly, see regression E. However, the coefficient on employment protection increases further and is significant at the 8% level. The results concerning the total effect of labor market institutions on life satisfaction are thus quite robust with respect to how the interest rate is included.

When comparing the direct and total effects, our findings can be summarized as follows: Since employment protection has no direct costs, the direct effect is positive. There are however, associated macroeconomic costs, which reduce the favorable effect. The benefit replacement rate tends to have a negative, though insignificant, direct effect (due to the direct costs of the unemployment benefit system), but it seems to be neutralized by beneficial macroeconomic effects[10]. The total effect may at best be slightly positive but insignificant. Benefit duration also tends to have a negative direct effect (also due to direct costs), and it becomes definitely negative due to macroeconomic costs.

4.2 Labor Market Institutions and Individual Unemployment

The preceding discussion has been concerned with labor market institutions in relation to macroeconomic uncertainty, especially due to high *general* unemployment. Labor market institutions also affect the life satisfaction consequences of actually being employed or unemployed, that is, *individual* unemployment. As Table A3 (regression A) shows, being unemployed strongly reduces life satisfaction. This is the case even though we control for income. Being unemployed thus has significant non-pecuniary costs (as already noted by, e.g., Winkelmann and Winkelmann 1998).

When we account for labor market institutions (regression B), the negative effect of being unemployed not only remains. In fact, it is (slightly) *increased* in comparison with regression A. In the light of the preceding discussion, this should not be surprising: Since only employment protection has a positive effect on life satisfaction -- not unemployment benefits -- the institutions (as a whole) act to the disadvantage of the people actually unemployed relative to the employed.[11] Interestingly, it is not just the employed that benefit (relative to the unemployed), but also the housewives (and even to a larger extent than the employed themselves). On the other hand, retired persons or persons with "other occupation" (e.g. the self-employed) suffer from labor market institutions since they participate in the costs without enjoying the benefits.

[10] A high benefit replacement rate may have a stabilizing effect on aggregate demand.
[11] This is what the coefficient actually says, since the employed are the reference group.

In contrast to the institutions themselves, their macroeconomic consequences affect people independent of their occupational status (the coefficients in regressions C-E are not much different from those in regression B).

These findings at the individual level are quite intuitive and enhance the credibility of our general results.

4.3 Marginal Probability Effects

For methodological reasons, the *MPE* with respect to the highest life satisfaction category (j = 4) has the same sign as the estimated coefficients reported in Table A3, wheras the opposite is the case for the lowest category (j = 1). Concerning the two intermediate categories, the sign of the *MPE*s depends on the estimated thresholds. In all our regressions (A-E), the *MPE*s of the intermediate categories have the same sign as the lowest category. This finding corresponds to the fact that average reported life satisfaction is 3.07, i.e., larger than j = 3. Overall, there is a monotonic relationship, that is, a positive (negative) coefficient of an explanatory variable increases (reduces) the probability of being happy and reduces (increases) that of being unhappy.

In terms of magnitudes the *MPE* for j = 1 is the smallest with respect to all variables in all regressions. From this it follows that for those who report to be "not at all satisfied" the considered economic and institutional variables are of comparatively little importance with respect to a switch to a happier category. For example, a rise in employment protection by one unit in model B reduces the probability that an individual is "not at all satisfied" by just 0.06 percentage points. The macroeconomic and institutional variables are most important with respect to reporting to be "very satisfied". The variables considered thus have their largest impact at the top of the life satisfaction spectrum.

5. Conclusions

In this paper we undertook a comprehensive assessment of the relationship between life satisfaction and several types of labor market institutions in Europe. We differentiated between costly institutions (the unemployment benefit system) and seemingly costless institutions (employment protection regulation). Moreover, we differentiated the direct linkage of life satisfaction to labor market institutions from the total relationship that includes the feedback through the institutions' effect on macroeconomic outcomes.

We found striking differences between the two types of institution as well as between the two types of effect. While the direct effect on life satisfaction is unambiguously positive in the case of employment protection, it tends to be negative for the level and duration of unemployment benefit. The total effect of employment protection, however, is weaker than the direct effect, and the total effect of benefit duration is unambiguously negative. The benefit level may have a slightly positive but insignificant effect.

In terms of policy implications our results yield no support for the idea that employment protection or the level of unemployment benefit are excessive in general. Even though employment protection may have some adverse effect on macroeconomic outcomes, this effect seems to be too weak to offset the benefit which employment protection yields in terms of reduced uncertainty. The unemployment benefit level, conversely, is problematic on the grounds of the associated direct costs, but these costs seem to be neutralized by the associated expenditures' role as built-in stabilizers. Conclusions with respect to the duration of unemployment benefits, however, are different. If our results are correct, they suggest that benefit duration should be carefully scrutinized in order to get the presumed beneficial effects more closely in line with the direct and indirect (macroeconomic) costs.

References

Belot, M., van Ours, J.C. (2001), Unemployment and Labor Market Institutions: An Empirical Analysis, *Journal of Japanese and International Economics* 15, 1-16.

Bertola, G., Blau, F.D., Kahn, L.M. (2002), Comparative Analysis of Labor Market Outcomes: Lessons for the United States from International Long-run Evidence, in: A. Krueger and R. Solow (eds.), *The Roaring Nineties: Can Full Employment be Sustained?*, New York: Russell Sage Foundation, 159-218.

Bjørnskov, C. (2003), The Happy Few: Cross Country Evidence on Social Capital and Life Satisfaction, *Kyklos* 56, 3-16.

Blanchard, O., Wolfers, J. (2000) The Role of Shocks and Institutions in the Rise of European Unemployment: The Aggregate Evidence, *The Economic Journal* (Conference Papers) 110, C1-C33.

Di Tella, R., MacCulloch, R.J., Oswald, A.J. (2001), Preferences Over Inflation and Unemployment: Evidence From Surveys of Happiness, *American Economic Review* 91, 335-342.

Di Tella, R., MacCulloch, R.J., Oswald, A.J. (2003), The Macroeconomics of Happiness, *Review of Economics and Statistics* 85, 809-827.

Fischer, S. (1981), Towards an Understanding of the Costs of Inflation II, *Carnegie-Rochester Conference Series on Public Policy* 15, 5-41.

Fitoussi, J.-P., Jestaz, D., Phelps, E.S., Zoega, G., (2000), Roots of the Recent Recoveries: Labor Reforms or Private Sector Forces, *Brookings Papers on Economic Activity* 1, 237-291.

Graham, C., Pettinato, S. (2001), Happiness, Markets, and Democracy: Latin America in Comparative Perspective, *Journal of Happiness Studies* 2, 237-268.

Greene, W.H. (2003), *Econometric Analysis*, 5th ed., Prentice Hall.

Layard, R. (2005), *Happiness: Lessons from a New Science*, Penguin Press.

Layard, R., Nickell, S., Jackman, R. (1991), *Unemployment: Macroeconomic Performance and the Labor Market*, Oxford: Oxford University Press.

Lucas, R. (1981), Discussion of: Stanley Fischer, 'Towards an Understanding of the Costs of Inflation II', *Carnegie-Rochester Conference Series on Public Policy* 15, 43-52.

Lucas, R. (2003), Macroeconomic Priorities, *American Economic Review* 93, 1-14.

Nickell, S.J. (2003), Labor Market Institutions and Unemployment in OECD Countries, *CESifo DICE Report* 2, 13-26.

Nickell, S.J., Nunziata, L. (2002), Labour Market Institutions Database. CEP, LSE.

Nickell, S.J., Nunziata, L., Ochel, W., (2005), Unemployment in the OECD since the 1960s. What do we know?, *The Economic Journal* 115, 1–27.

Welsch, H. (2006), Is the "Misery Index" Really Flawed", Discussion Paper, University of Oldenburg.

Winkelmann, L., Winkelmann, R. (1998), Why are the Unemployed so Unhappy? Evidence from Panel Data, *Economica* 65, 1-15.

Wolfers, J. (2003), Is Business Cycle Volatility Costly? Evidence from Surveys of Subjective Well-Being, *International Finance* 6, 1-31.

Appendix

Table A1: Life satisfaction

life satisfaction = *j*	Count	Percent	Cumulative Count	Cumulative Percent
1	1710	3.83	1710	3.83
2	5953	13.33	7663	17.16
3	24566	55.03	32229	72.19
4	12415	27.81	44644	100

Table A2: Descriptive statistics of the labor market institutions

	employment protection	benefit replacement rate	benefit duration
Mean	1.286	0.517	0.572
Maximum	1.920	0.780	1.020
Minimum	0.350	0.220	0.070
Std. Dev.	0.496	0.154	0.237

Table A3: Complete regression results, 1992 – 1998, dependent variable: life satisfaction (LS)

	(A)	(B)	(C)	(D)	(E)
employment protection		1.2001	0.5583	0.7875	0.9676
		(2.362)	(1.116)	(1.608)	(1.748)
benefit replacement rate		-0.8656	0.1873	0.2187	-0.0621
		(-1.223)	(0.281)	(0.378)	(-0.091)
benefit duration		-0.3790	-0.6970	-0.7666	-0.7981
		(-0.984)	(-2.044)	(-2.249)	(-2.314)
unemployment rate	-0.0364	-0.0071			
	(-14.971)	(-0.651)			
inflation rate	-0.0773	-0.0508			
	(-18.826)	(-1.242)			
growth rate	0.0152	0.0297			
	(4.032)	(5.120)			
interest rate			0.0029		0.0064
			(0.362)		(0.768)
lagged interest rate				0.0161	0.0181
				(1.576)	(1.707)
household income	0.0586	0.0564	0.0561	0.0561	0.0561
	(32.602)	(28.835)	(28.734)	(28.735)	(28.732)
age	-0.0320	-0.0308	-0.0309	-0.0309	-0.0309
	(-15.106)	(-13.662)	(-13.706)	(-13.697)	(-13.702)
age^2	0.0004	0.0003	0.0003	0.0003	0.0003
	(15.704)	(14.466)	(14.495)	(14.486)	(14.491)
male			reference group		
female	0.0550	0.0588	0.0586	0.0586	0.0586
	(4.848)	(4.848)	(4.835)	(4.836)	(4.837)
education ≤ 15 years			reference group		
education > 15 ≤ 19 years	0.0813	0.0641	0.0634	0.0633	0.0633
	(5.928)	(4.353)	(4.309)	(4.299)	(4.302)
education > 19 years	0.1789	0.1668	0.1663	0.1663	0.1663
	(10.883)	(9.376)	(9.354)	(9.353)	(9.354)
education still	0.0297	0.0626	0.0609	0.0658	0.0635
	(0.671)	(1.331)	(1.295)	(1.401)	(1.349)
single			reference group		
married	0.1199	0.1213	0.1214	0.1213	0.1214
	(6.834)	(6.453)	(6.460)	(6.457)	(6.460)
living together	0.0215	0.0314	0.0327	0.0335	0.0336
	(0.819)	(1.153)	(1.201)	(1.231)	(1.234)
divorced	-0.2413	-0.2518	-0.2519	-0.2515	-0.2515
	(-7.617)	(-7.595)	(-7.603)	(-7.589)	(-7.588)
separated	-0.3046	-0.3086	-0.3087	-0.3089	-0.3087
	(-6.460)	(-6.383)	(-6.389)	(-6.395)	(-6.390)
widowed	-0.1300	-0.1417	-0.1408	-0.1411	-0.1410
	(-4.861)	(-4.971)	(-4.941)	(-4.949)	(-4.948)
employed			reference group		

unemployed	-0.4542	-0.4774	-0.4773	-0.4779	-0.4780
	(-18.635)	(-18.636)	(-18.647)	(-18.672)	(-18.672)
retired	0.0356	0.0179	0.0178	0.0180	0.0179
	(1.742)	(0.811)	(0.810)	(0.816)	(0.815)
housewife	0.0408	0.0453	0.0449	0.0450	0.0451
	(2.365)	(2.397)	(2.375)	(2.383)	(2.385)
other occupation	0.2395	0.2059	0.2067	0.2024	0.2044
	(5.569)	(4.523)	(4.543)	(4.449)	(4.488)
no children			reference group		
one child	-0.0465	-0.0410	-0.0416	-0.0416	-0.0416
	(-3.079)	(-2.520)	(-2.559)	(-2.556)	(-2.558)
two children	-0.0473	-0.0497	-0.0497	-0.0497	-0.0497
	(-2.751)	(-2.677)	(-2.679)	(-2.678)	(-2.679)
three children	-0.0420	-0.0449	-0.0447	-0.0443	-0.0445
	(-1.469)	(-1.470)	(-1.465)	(-1.453)	(-1.457)
four and more children	-0.2449	-0.2668	-0.2654	-0.2661	-0.2660
	(-4.770)	(-4.908)	(-4.882)	(-4.895)	(-4.895)
rural			reference group		
small town	-0.0666	-0.0722	-0.0719	-0.0719	-0.0720
	(-5.505)	(-5.587)	(-5.560)	(-5.564)	(-5.573)
big town	-0.1446	-0.1464	-0.1461	-0.1462	-0.1463
	(-10.984)	(-10.280)	(-10.260)	(-10.273)	(-10.27)8
limit point 2	-3.0013	-0.7693	-0.8613	-0.2505	0.0127
	(-38.395)	(-1.045)	(-1.260)	(-0.330)	(0.015)
limit point 3	-2.0313	0.1561	0.0632	0.6740	0.9373
	(-26.244)	(0.212)	(0.092)	(0.889)	(1.105)
limit point 4	-0.2577	1.9483	1.8544	2.4652	2.7285
	(-3.348)	(2.646)	(2.712)	(3.251)	(3.215)
country fixed effects	✓	✓	✓	✓	✓
common time trend	✓	✓	✓	✓	✓
country time trend	✓	✓	✓	✓	✓
countries	10	10	10	10	10
total observations	44644	44644	44644	44644	44644
Schwarz criterion	1.9482	1.9244	1.9249	1.9248	1.9250
Pseudo-R^2	0.1210	0.1132	0.1127	0.1128	0.1128

Table A2: Marginal probability effect for life satisfaction = *j*

	Coefficient	*j* = 1	*j* = 2	*j* = 3	*j* = 4
Model A					
unemployment rate	-0.0364	0.0017	0.0063	0.0036	-0.0115
growth rate	0.0152	-0.0007	-0.0026	-0.0015	0.0048
inflation rate	-0.0773	0.0037	0.0133	0.0075	-0.0245
Model B					
employment protection	1.2001	-0.0602	-0.1981	-0.1212	0.3796
benefit replacement rate	-0.8656	0.0434	0.1429	0.0874	-0.2738
benefit duration	-0.3790	0.0190	0.0626	0.0383	-0.1199
unemployment rate	-0.0071	0.0004	0.0012	0.0007	-0.0022
growth rate	0.0297	-0.0015	-0.0049	-0.0030	0.0094
inflation rate	-0.0508	0.0025	0.0084	0.0051	-0.0161
Model C					
employment protection	0.5583	-0.0282	-0.0923	-0.0560	0.1765
benefit replacement rate	0.1873	-0.0095	-0.0310	-0.0188	0.0592
benefit duration	-0.6970	0.0352	0.1152	0.0700	-0.2203
interest rate	0.0029	-0.0001	-0.0005	-0.0003	0.0009
Model D					
employment protection	0.7875	-0.0397	-0.1301	-0.0792	0.2490
benefit replacement rate	0.2187	-0.0110	-0.0361	-0.0220	0.0692
benefit duration	-0.7666	0.0387	0.1266	0.0771	-0.2424
lagged interest rate	0.0161	-0.0008	-0.0027	-0.0016	0.0051
Model E					
employment protection	0.9676	-0.0488	-0.1599	-0.0972	0.3059
benefit replacement rate	-0.0621	0.0031	0.0103	0.0062	-0.0196
benefit duration	-0.7981	0.0403	0.1319	0.0802	-0.2523
interest rate	0.0064	-0.0003	-0.0011	-0.0006	0.0020
lagged interest rate	0.0181	-0.0009	-0.0030	-0.0018	0.0057