IAAEG
Institut für Arbeitsrecht und Arbeitsbeziehungen in der Europäischen Gemeinschaft

Discussion Paper Series No. 04/2011

Do labour market institutions influence consumers' saving intentions?

Aggregate evidence from Europe.

Alexander Ahrens

Institute for Labour Law and Industrial Relations in the European Community (IAAEG)
54286 Trier
Tel. +49 651 201-4741
Fax. +49 651 201-4742
www.iaaeg.de

Do labour market institutions influence consumers' saving intentions? Aggregate evidence from Europe.

Alexander Ahrens *

This version: April 2011

Abstract

Intertemporal decision making of a private household depends on its expected income distribution. Since an important feature of labour market institutions in modern welfare states is to provide cash transfers as income replacement in case of unemployment, it is hypothesised that unemployment benefits reduce the motive to save for precautionary reasons. Based on consumer sentiment data from the European Commission's consumer survey, this paper provides evidence that aggregate saving intentions are significantly influenced by unemployment benefits. It can be shown that higher benefits lower the intention to save.

JEL codes: J65, E21, D12, D84

Keywords: Labour market institutions, Unemployment benefits, Precautionary savings, Consumer confidence

*Contact: Trier University, Fachbereich IV-BWL, D-54286 Trier, Germany, ahrens@uni-trier.de.
I am grateful to seminar participants at the 2009 SAVE conference in Deidesheim for comments and advice.

1 Introduction

Labour market institutions and their influence on economic behaviour have become major issues in economic policy over the past two decades (Freeman [1998]). The focus in the literature has primarily been concentrated on the link between institutions and labour market performance, especially unemployment (see e.g. the contributions of Nickell and Layard [1999], Blanchard and Wolfers [2000] and Nickell et al. [2005]). By looking at consumers' saving intentions, this paper expands this focus and adds to our understanding of how labour market institutions affect consumers' expectations and intertemporal decision making.

One important feature of labour market institutions in modern welfare states is to provide cash transfers as income replacement in case of unemployment. In this respect, unemployment benefits represent a (partial) insurance of households against a potential loss of labour income and therefore reduce expected income uncertainty. Recent work based on survey data indeed suggest that benefits have a positive impact on perceived job satisfaction and perceived income certainty of employees (Lollivier and Rioux [2006] and Clark and Postel-Vinay [2009]). Income uncertainty in turn determines the magnitude of capital accumulation for precautionary reasons. According to the precautionary savings' literature, an increase in uncertainty concerning labour income is expected to influence intertemporal decision making and increase saving (and decrease consumption, respectively). A necessary condition to save for precautionary reasons is a positive third derivative ($u''' > 0$) of the household's period utility function (see Leland [1968], Sandmo [1970], Kimball [1990]). Under this condition, a higher expected variance of future income leads a prudent household to accumulate a 'buffer stock' with the intent to insure against income risk and to smooth consumption (Carroll [1997]). Empirical analyses generally support the existence of a precautionary saving motive. The estimates of the extent of a household's buffer stock (i.e. the share of assets which

have been accumulated for precautionary reasons) range from about 50% (Carroll and Samwick [1998]) to more modest levels between 2% (Guiso et al. [1992]) and 20% (Lusardi [1997]). To the best of my knowledge, the only study which examines the impact of unemployment insurance on wealth accumulation is that of Engen and Gruber [2001]. The authors use household panel data from the Survey of Income and Program Participation and show that a 50% reduction of the replacement rate results in 14% higher asset holdings. Their results may be read as evidence that social insurance is a (at least imperfect) substitute for private insurance in the form of a buffer stock. In sum, theoretical considerations and existing empirical analyses suggest that unemployment benefits reduce income uncertainty and therefore lower the incentive to save for precautionary reasons. Therefore, the first hypothesis to be tested is that the income replacement rate has a negative impact on households' saving intentions.

There may be a second, more indirect effect of unemployment insurance on the incentive to accumulate a buffer-stock wealth: unemployment benefits may mitigate the responsiveness of saving to increased probability of job loss. For example, let us assume that the probability of job loss rises. As argued above, the extent of unemployment benefits determines the possible income loss if the job loss actually occurs. Therefore, a household's reaction concerning its precautionary saving is ceteris paribus supposed to be the smaller, the higher the income replacement rate in case of unemployment is.

In this paper, I follow Malley and Moutos [1996] who use the aggregate unemployment rate as a proxy for the probability of job loss.[1] It is hypothesised that the income replacement rate reduces the reaction in saving intentions to a given change in unemployment. In this sense, unemployment insurance may contribute to smooth saving behaviour and stabilise expectations with respect to such macro-

[1] Malley and Moutos [1996] analyse the impact of aggregate income uncertainty on US quarterly car sales. They find that the consumption of motor vehicles significantly decreases with the unemployment rate.

economic shocks like a rise in the unemployment rate (see e.g. Ochel [2005] or Dolls et al. [2009] for a simulation study)[2].

The study is based on subjective measures of saving intentions to capture the genuine response of the households' saving behaviour to changes in unemployment insurance as well as to the interaction of benefits and the unemployment rate. Using saving intentions seems to be a well suited alternative to the use of aggregate saving rates from the national accounts system. The latter is defined as a 'residual', calculated as the difference of disposable income and aggregate consumption. This variable therefore maps both intended saving and unintended saving, which simply consists of funds not spent at the end of the year. Following Katonas's concept of the 'willingness to buy', which "depends primarily on attitudes and expectations about personal finances and the economy as a whole" (Katona [1960, 22]), this paper focuses on the 'willingness to save' and the way it is influenced by unemployment insurance. Although intended saving and actual aggregate saving are not totally congruent, there is evidence in the literature that subjective expectations and intentions are highly relevant to actual behaviour. Consumer sentiment, for example, is not only found to be highly correlated with aggregate consumption growth but also to be able to explain it beyond other economic indicators like disposable income, indicating that it may contain additional information (Ludvigson [2004], Carroll [1997], Acemoglu and Scott [1994] and Souleless [2004] using microdata). Instead of using the overall index of consumer sentiment, which is composed of the balance of answers to five questions concerning both the current economic conditions and future prospects, Kwan and Kotsomitis [2004] only use those questions expressing consumers' expectations. Their results suggest that private households' subjective assessments of their future income situation do matter for consumption growth in the US. Furthermore, they find that expectations are incrementally more informative about household spending than the overall index. Roos [2008] also

[2]This is especially the case if the households act under liquidity constraints.

uses only two questions out of the consumer confidence data of the European Commission related to the consumption expectations over the next 12 months instead of the summary index of consumer confidence[3]. He finds that aggregate information on households' consumption expenditure has predictive power for the actual change in consumption. As regards the present study on saving behaviour, the composite consumer confidence index of the European Commission is not an adequate measure as well. Besides saving intentions, it includes additional items on expected economy-wide unemployment and expectations on economic situation both of the individual household as well as the economy as a whole. These items are not of central interest here and may rather overlay the effects of saving behaviour.

The predictive power of saving intentions for actual saving crucially depends on the successful implementation of intentions via "careful planning and efforts of self-control" (Rabinovich and Webley [2007, 444]). Using the Dutch DNB household survey and additional survey data from Belarus, Rabinovich and Webley [2007] show that about 94% (68%) of the respondents in the Netherlands (Belarus) who planned to save actually implemented their plans. So the 'willingness to save' materialised in the majority of the cases.

Reactions of households' saving intentions on reforms of unemployment insurance may additionally indicate whether the intended effects on labour market performance are anticipated by consumers. Consumer pessimism during reforms may influence the adjustment path to a new equilibrium and cause J-curve effects. In that case, addressees of labour market deregulation do not anticipate any positive long-run effects to income and unemployment, but are sceptical about the results of the reform. Additionally, temporary burdens may induce pessimism and resistance to the reform. Optimism on the other hand may support the aim of the reform (Bertola et al. [1995, 381ff] and Heinemann et al. [2008, 131f]).

[3]He uses questions 8 and 9 on the attitude to major purchases at the present and expected purchases in the next 12 months respectively. Both questions are part of the European Commission's survey, but are not included in the summary consumer confidence indicator (Roos [2008, 393f]).

The work of Heinemann et al. [2008] represents the study most closely related to this paper. Among other things, the authors are interested in estimating the impact of labour market deregulation on consumer confidence. They use a composite consumer confidence index as dependent variable, and a single dummy variable indicator as a proxy for labour market reforms which is not specified in detail. Including 20 OECD countries in their panel, they find no significant effect of labour market deregulation on consumer confidence.[4] This paper differs from that of Heinemann et al. [2008] in two aspects. As argued above, I will use saving intentions as the dependent variable to capture the households' saving behaviour instead of using a composite indicator for consumer confidence. Moreover, instead of using a single indicator variable for labour market deregulation, I concentrate on unemployment benefits. This approach allows clearer theoretical predictions and interpretations of results in contrast to summary indicators. In such an analysis, various effects may interfere with each other which in addition have not yet been identified from a theoretical point of view. Secondly, they estimate a simple fixed-effect instrumental variable model without including any interaction effects. As will become clear in the next sections, I will present a more thorough analysis by applying a variety of econometric methods and robustness checks. Additionally, to test the indirect effect of unemployment benefits on incentives to save, an interaction effect of the unemployment rate and benefits will be included in some specifications.

The remainder of this paper is organised as follows. The next section describes the dataset and covers methodological issues. Results are presented in section 3, followed by some robustness checks. Section 5 concludes with a summary of the findings and suggestions for future research.

[4] In some specifications the authors use the saving rate as dependent variable. Here they do find a significantly positive effect of labour market deregulation on the saving rate.

2 Data and Methodology

To study the two main hypotheses of this paper –namely unemployment benefits (1) have a direct negative effect on saving intentions and (2) reduce the reaction in saving intentions to a given change in unemployment– I use panel data of 11 European countries, covering the years 1985-2005.[5] Combining observations for several countries in a panel framework not only introduces more variation since especially unemployment benefits show little variation over time in some countries, but may also give more accurate estimators (see e.g. Verbeek [2004, 343]).

Detailed data on consumer confidence is provided by the EU Commission's consumer survey program. Besides the composite index on consumer confidence itself, the dataset provides information on all single questions from which the summary index is calculated.[6] The monthly surveys are conducted by national agencies, either commercial or official ones, starting in January 1985 for the early EU member states. For this study, I aggregated the seasonal adjusted monthly series to a yearly average to obtain the same time span as for the benefit data. Comparability among the member states is ensured by harmonised methods of data collection, especially concerning the design of the questionnaire, sampling methods and the number of respondents (see appendix A.1 for additional information). Survey responses on attitudes and expectations are provided as aggregate balances of positive and negative answers, so that they range between +100 and -100. Because this study focuses on saving behaviour, I use the information on saving intentions. The question in the survey reads as follows:

Over the next 12 months, how likely is it that you save any money?

[5] The countries included are: Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Netherlands, Portugal, Spain, United Kindom; other countries are not included due to data deficiencies.

[6] Furthermore, it allows a differentiated analysis by socio-economic groups, e.g. by income groups. This feature will be used in section 4 by re-estimating the basic specifications for different income quartiles.

Answers are given on a four point scale ('very likely' / 'not likely at all').[7] The reader should bear in mind that this question differs from the one used in Rabinovich and Webley [2007] and might cover both the willingness and the expected ability to save. For example, one could imagine that a household really *wants* to save but expects not to have the means to do so and hence responds a small likelihood to save. This question therefore is assumed to fit the expected saving behaviour of the household even better than just asking whether the household plans to save. Descriptive statistics of the saving intentions are given in the appendix.

Information on unemployment insurance is provided by the CEP-OECD dataset ([Nickell, 2006]). The OECD reports replacement rate aggregates, which represent the average gross replacement rate over two income levels and three family situations.[8] Following Nickell et al. [2005], I use the aggregate replacement rate during the first year of unemployment instead of the OECD summary measure representing the average replacement rate during five years after the job loss. The generosity of the unemployment insurance in the first year of unemployment is supposed to be more relevant to the households' saving behaviour than the summary measure, because it covers (1) income replacement in the period immediately following a potential job loss and (2) the median unemployment duration in the sample over the years 1992-2005 amounts to 10.12 months[9]. In section 4, I will test the sensitivity of the results by using the average replacement rate over three unemployment durations. An aspect of unemployment insurance, which is not explicitly included in the OECD indicator, is eligibility. This term refers to the norms that determine the access to the benefits, especially the minimum contribution period to

[7]Interpersonal comparability of this question therefore is limited because different respondents may understand the question itself as well as the categories differently (see e.g. Dominitz and Manski [2004]). However, by using aggregate data and avoiding direct interpersonal comparisons, this aspect of the questioning is not seen as a major problem in this study.

[8]Data on replacement rates are available only for odd years. Data for even years were linearly interpolated following Di Tella and MacCulloch [2004] and Nickell et al. [2005].

[9]The (exact) median was calculated based on grouped data from the OECD Annual Labour Force Survey (age 15-64). Unfortunately, data on unemployment duration before 1992 are not available.

qualify for benefits in case of unemployment. Therefore by considering only the level of benefits, the extent of income insurance in case of unemployment may be overestimated. However, neglecting eligibility does not severely bias estimates, if only the countries differ in their eligibility criteria without pronounced variation over time. In this case, unobserved heterogeneity is captured by fixed country effects in the panel estimation. According to some data available in the MISSOC database of the European Commission, the range of qualifying periods differs between six (e.g. France) and twelve months (e.g. Germany and Italy) of employment within a period of one to three years before unemployment.[10] Over the period 2004 to 2008 covered by the MISSOC database there are no major changes. Another source of information on institutional changes is offered by the 'Social Reforms Database' from the Fondazione Rodolfo DeBenedetti.[11] Between 1986 and 2005 there are only marginal changes in the qualifying period in Portugal (1988) and Spain (1995). Although the OECD index displays mainly the monetary generosity of benefits, disregarding eligibility criteria is therefore not considered a serious problem in the context of this study.

Despite these drawbacks of the indicator on unemployment benefits discussed above and the ongoing debate over the usefulness and precision of the OECD indicators in general (see e.g. Eichhorst et al. [2008]), these indicators are widely used in the literature and are the best available indicators at the moment for the purpose of doing international comparative research (Allard [2005] and Ochel [2006]). Data on other variables are taken from SourceOECD databases. Sources and descriptive statistics are given in the appendix.

[10]The Mutual Information System on Social Protection (MISSOC) of the European Union provides basic information about most of the social protection areas in each country, as well as about the financing of social protection, with highly structured and comparative information in over 300 information categories, grouped in 12 tables. The database is available online: http://ec.europa.eu/employment_social/spsi/missoc_en.htm.

[11]Further information about the 'Social Reforms Database' under http://www.frdb.org/. Only recently, the foundation set up a (preliminary) update of the database jointly with the IZA, covering the years 1980 onwards.

Methodology

In order to identify common patterns in the relationship between saving intentions and unemployment insurance across all countries in the sample, I will resort to panel estimation techniques. Basically, the following reduced form models are estimated:

$$\begin{aligned} SI_{i,t} &= \alpha + \beta_1 UB_{i,t} + \beta_2 UR_{i,t} + \beta_3 (UB * UR)_{i,t} + \\ &+ \gamma_1 INT_{i,t} + \gamma_2 WGDP_{i,t} + u_i + \lambda_t + \epsilon_{i,t} \end{aligned} \tag{1}$$

and

$$\begin{aligned} SI_{i,t} &= \alpha + \delta SI_{i,t-1} + \beta_1 UB_{i,t} + \beta_2 UR_{i,t} + \beta_3 (UB * UR)_{i,t} + \\ &+ \gamma_1 INT_{i,t} + \gamma_2 WGDP_{i,t} + u_i + \lambda_t + \epsilon_{i,t} \end{aligned} \tag{2}$$

where SI is the survey indicator for saving intentions, UB represents the unemployment benefits measured by the OECD replacement rate and UR the unemployment rate as a proxy for the threat of a job loss. Additionally, short term real interest rates (INT) and the growth rate of real GDP per capita (WGDP) enter the equation as controls. The estimation is therefore based on a core set of explanatory variables that are suggested by theory to have an influence on saving intentions. According to standard models, current saving may be influenced not only by current income but also by the one expected in the future. The future expected income is mainly determined by (1) the probability of job loss, (2) the replacement rate concerning labour income and (3) interest rates concerning the income from assets.[12] Fixed country effects which are generally allowed to be correlated with the regressors are included to account for unobserved time invariant heterogeneity. Common time effects capture shocks to saving intentions which affect all countries in the

[12]In general there are two possibilities to include those variables in equations (1) and (2). A rational expectation's view would suggest using a one (or more) period lead of those controls. A more conservative approach is followed in this study by using the current value of the controls. This approach assumes that the respondents extrapolate the numbers at the date of the interview into the near future.

sample in a certain year. Moreover, there are a couple of other econometric issues that need to be handled by the estimation approach. Firstly, the idiosyncratic error term has to be tested for the standard assumptions of no serial correlation and groupwise homoscedasticity. Although the fixed year effects included in the equations may already capture a large part of possible cross-sectional or spatial correlation of the disturbances, I additionally apply the formal Breusch-Pagan test for cross-sectional independence suggested by Greene [2000, 601]. If cross-sectional dependence is detected, one has to apply robust estimation techniques in order to obtain consistent estimates of the standard errors of the estimated parameters. The test statistics in table 8 in the appendix suggest that the basic specifications suffer from all three problems. In the basic fixed effects OLS estimations, I therefore apply the nonparametric covariance matrix estimator proposed by Driscoll and Kraay [1998] which produces standard errors that are robust to violations of the standard assumptions of homoscedasticity, spatial independence and no serial correlation of the disturbances. Secondly, since the current growth rate of real GDP per capita may be endogenous with regard to saving intentions, it is instrumented in some specifications by the level and growth rate of unit labour cost, an election dummy, the fertility rate and the participation rate. Those instruments are mainly used in pursuance of Heinemann et al. [2008, 123ff]. Finally, to account for potential inertia in saving intentions due to lagged effects from the regressors on expected saving or simply habit persistence, I additionally estimate a dynamic panel data model (equation (2)). Following Loayza et al. [2000, 169], such a dynamic specification allows me both to distinguish between short and long run effects and to maintain the annual information of the data without having to utilise three- or five-year (moving) averages. However, one crucial issue arising in estimating dynamic panel data models with small N –a common feature of macro panels– is that the estimated coefficients are biased because the lagged dependent variable is correlated with the error term u_i ([Nickell, 1981]). Nickell [1981] and Kiviet [1995] derive an expression for this bias and Kiviet develops a bias-corrected Least

Square Dummy Variable estimator (LSDVC). Although the bias declines with the time dimension T of the panel and the fixed effects estimators of the coefficients in equation (2) are consistent if T tends to infinity (see e.g. Baltagi [2005, 135]), the LSDVC estimator can also be regarded as a robustness check. The basic idea of this estimator is to correct the standard Least Square Dummy Variable estimator by an approximation of the bias. Bias approximations are initialised by three possible consistent estimators (Anderson-Hsiao, Arellano-Bond and Blundell-Bond estimators). Judson and Owen [1999] and Kiviet [1995] show that this estimator often outperforms GMM estimators like Arellano/Bond or Blundell/Bond when N is small or only moderately large. Here I use the LSDVC estimation technique developed by Bruno [2004].[13] The issue of potential unit roots in the panel and alternative estimation approaches are discussed in section 4.

3 Results

Results for the static model according to equation (1) are given in table 1. The first three specifications refer to standard two-way error component models including both fixed country and fixed year effects. Joint significance test statistics show that the year effects do have significant explanatory power and are therefore better included in the estimations. The results are obtained by ordinary least squares estimation with Driscoll-Kraay standard errors. The last specification gives the results for an instrumental variable (IV) estimation using the instruments suggested by Heinemann et al. [2008] and with standard errors robust to autocorrelation and heteroscedasticity in the disturbances. However, the coefficients do not change substantially between the IV-estimation and the fixed-effects model with the full set of control variables (specification (3)). The Hansen J-statistic does not allow me

[13] A direct application of the GMM estimator does not fit well to the panel dimensions of the sample. The estimator is best applied to the 'small T, large N' case, because the number of instruments sharply increase with T. As a result, the estimated coefficients converge to those obtained by fixed-effects OLS and cluster-robust standard errors as well as specification tests may be not reliable (see Roodman [2008, 14] and Baltagi [2005, 153]).

to reject the null of exogeneity of the instruments, but the underidentification-test (Kleibergen-Paap LM statistic) indicates a weak instruments problem. The results of the IV-specification are therefore to be treated with caution.

Table 1: Panel estimation for saving intentions: static model

		FE-OLS		IV-OLS[a]
Variable	(1)	(2)	(3)	(4)
Unemployment benefits (UB)	-0.586***	-0.413***	-0.851***	-0.851***
	(0.082)	(0.083)	(0.225)	(0.245)
Unemployment rate (UR)		-1.879***	-3.988***	-3.987***
		(0.393)	(1.248)	(1.131)
UB*UR			0.047*	0.046**
			(0.021)	(0.023)
Real GDP per capita (growth rate)		120.379**	124.176**	118.151
		(42.506)	(41.354)	(112.002)
Short term real interest rate		-0.018	-0.133	-0.130
		(0.327)	(0.233)	(0.311)
Constant	6.262	13.523**	33.728**	
	(3.863)	(4.980)	(12.144)	
No. of observations	229	229	229	229
No. of countries	11	11	11	11
R^2 [b]	0.496	0.624	0.649	0.649
F-test fixed year effects	537.38	1693.93	782.22	141.71
(p-value)	(0.000)	(0.000)	(0.000)	(0.000)

Remarks:
*,**,*** indicate significance at 10, 5 and 1 per cent respectively. All fixed-effects OLS estimations with Driscoll/Kraay std.errors robust to heteroscedasticity, autocorrelation and cross-sectional correlation. FE-IV estimation with heteroscedasticity and autocorrelation consistent standard errors. Robust std. errors in parentheses.
[a] Kleibergen-Paap test statistic (underid. test) is 5.585 (p-value: 0.232). Hansen J-statistic (overid. test)is 4.060 (p-value: 0.255). Instruments used: unit labour cost (level/growth rate), election dummy, participation rate.
[b] R^2 in fixed-effects OLS estimations refers to R^2 (within) while R^2 in FE-IV estimation refers to centered R^2.

According to the results in the first column in table 1, the unemployment benefits significantly influence the households' saving intentions. Raising the replace-

ment rate by 10% ceteris paribus results in a 5.86 points drop in saving intentions. This effect is still highly significant, but somewhat smaller when adding additional explanatory variables (column 2). The coefficients on GDP growth and the real interest rate are generally in line with findings in the literature on the determinants of saving rates (see e.g. Callen and Thimann [1997], Loayza et al. [2000] or Schrooten and Stephan [2004]). The growth rate of the real GDP per capita has a positive sign: the higher the income growth, the higher the saving. The short term real interest rate, however, does not significantly affect expected saving. The estimated coefficient of the unemployment rate deserves some more explanation. Following the precautionary savings argument, a positive sign would has been expected, since a higher risk of unemployment and therefore labour income in the future is supposed to increase current saving. I find, however, a significantly negative effect of the unemployment rate on saving intentions. An explanation for this result may be found in the wording of the question in the consumer survey on saving intentions. The respondents are asked to indicate the likelihood of saving in the next 12 months following the date of the survey. As mentioned above, the question therefore may capture both the willingness and the expected ability to save. The expected ability to save, in turn, is likely to crucially depend on the expected employment status during the period in question. So, although a household that faces a high risk of unemployment may be willing to save for precautionary reasons, it may nevertheless indicate a small likelihood of actually being able to save, because in the case of unemployment it expects not to have enough money left after having paid for basic necessities. This effect may be labelled as an 'expected income effect' due to the risk of unemployment. In a simple two-period model given in appendix A.3, it is indeed possible to show that under certain assumptions concerning the expectation formation of the respondent the current unemployment rate at the time of the survey negatively influences expected saving. The negative sign here may therefore indicate that the negative 'expected income effect' due to a higher unemployment rate overcompensates the precautionary effect of a higher risk of un-

employment. Following this line of argument, the positive sign of the interaction term in column (3) suggests an expectation smoothing effect of the unemployment benefits. The higher the benefits at a given unemployment rate, the less threatening is the negative expected income effect due to unemployment and the smaller is the reduction in the propensity to save. For a hypothesised country with the average unemployment rate of the sample, an increase of the first-year benefits by 10% significantly reduces saving intentions by 4.52 points. By comparison of the different estimates in table 1, it becomes clear that there is a direct negative effect of unemployment benefits on saving intentions as well as a more indirect channel that affects saving intentions through the moderation of the expected income effect. Whereas the estimates in specifications (1) and (2) comprise both effects, the estimated coefficients of the unemployment benefits in columns (3) and (4) only refer to the direct effect. According to the latter, an increase of the replacement rate leads the households to indicate smaller intended saving for precautionary reasons (-0.851 points for each percentage point of income replacement). On the other hand, the expected drop of income in case of unemployment becomes smaller, making the households more confident that they may be able to accumulate any assets at a given current rate of unemployment. With regard to an average standard deviation of the saving intentions within countries of 10.221 points, the impact of the replacement rate on saving intentions does not seem to be substantial. This result, however, is not surprising, given the existing evidence in the literature. Saving for precautionary reasons is one out of many motives for saving and, as mentioned in the introduction, some authors give not much importance to precautionary saving in relation to overall saving of a household. But the negative impact of unemployment benefits on saving intentions in this sample of European countries supports the result of Engen and Gruber [2001], who also find an imperfect substitution effect of unemployment insurance and private savings in the US. Moreover, this finding is consistent with more recent contributions indicating that unemployment insurance positively affects the perceived income security (Lollivier and Rioux [2006] and

Clark and Postel-Vinay [2009]). The higher the replacement rate, the lower is the income uncertainty and the smaller is therefore the motive for building up a buffer stock for precautionary reasons.

The specifications based on the dynamic panel model outlined in equation (2) basically support the findings of the static model. Table 2 reports the results for the dynamic model. Besides the fixed-effects OLS (spec. (1)-(3)) and the IV estimates (spec. (4)), coefficients estimated by LSDVC are given in column (5). According to the diagnostic statistics of the IV model, there are no problems concerning the relevance and exogeneity of the instruments.[14]

Taking a closer look at the estimated coefficients, the saving intentions show a high degree of persistence, i.e. saving intentions in the past have a significant and positive impact on the current saving intentions. Estimates of the coefficients on the lagged saving intentions range between 0.752 and 0.830. This finding is basically in line with the results of e.g. Loayza et al. [2000, 176] who also find a high degree of persistence (0.674) of the private saving rates in the OECD countries. With regard to EU 15 countries, Schrooten and Stephan [2004][16] report coefficients between 0.55 and 0.62. In contrast to the static estimations in table 1, the short term real interest rate has a (weakly) significant and positive influence on the saving intentions. Additionally, the dynamic model allows to distinguish between short-run and long-run effects of the regressors. Evaluated at a constant average unemployment rate, the full specifications (3)-(5) suggest a short-run effect of the first-year unemployment benefits on saving intentions between -0.137 (spec. (3)) and -0.082 (spec. (5)). Due to the persistence in the saving intentions, the long-run effects are higher in absolute terms and range between -0.522 (spec. (3)) and -0.463 (spec. (5)).

Overall, the results suggest that unemployment benefits reduce saving intentions.

[14]However, based on the endogeneity test, I cannot reject the null hypothesis that the real growth rate of GDP per capita may actually be treated as exogenous.

Table 2: Panel estimation for saving intentions: dynamic model

		FE-OLS		FE-IV[a]	LSDVC[b]
Variables	(1)	(2)	(3)	(4)	(5)
Saving intention (lagged)	0.830***	0.782***	0.752***	0.752***	0.824***
	(0.040)	(0.034)	(0.033)	(0.048)	(0.056)
Unemployment benefits (UB)	-0.118**	-0.098*	-0.324***	-0.325***	-0.277**
	(0.043)	(0.044)	(0.095)	(0.097)	(0.110)
Unemployment rate (UR)		-0.468*	-1.533**	-1.536***	-1.332***
		(0.220)	(0.515)	(0.426)	(0.506)
UB*UR			0.022**	0.023***	0.023***
			(0.008)	(0.008)	(0.008)
Real GDP per capita		91.942***	95.101***	96.993**	94.655***
(growth rate)		(15.323)	(55.408)	(40.739)	(20.754)
Short term real interest rate		0.482**	0.385**	0.384*	0.426*
		(0.163)	(0.161)	(0.228)	(0.254)
Constant	6.047**	1.839	13.100**		
	(2.225)	(2.208)	(5.263)		
No. of observations	218	218	218	218	218
No. of countries	11	11	11	11	11
R^2 [c]	0.822	0.846	0.852	0.852	-
F-test fixed year effects	218.47	649.65	1213.54	46.89	23.68 (χ^2)
(p-value)	(0.000)	(0.000)	(0.000)	(0.000)	(0.209)

Remarks:
*,**,*** indicate significance at 10, 5 and 1 per cent respectively. Fixed year effects included. All fixed-effects OLS estimations with Driscoll/Kraay std.errors robust to heteroscedasticity, autocorrelation and cross-sectional correlation. FE-IV estimation with heteroscedasticity and autocorrelation consistent standard errors. Robust std. errors in parentheses.

[a] Kleibergen-Paap test statistic (underid. test) is 10.207 (p-value: 0.069). Hansen J-statistic (overid. test)is 7.716 (p-value: 0.103). Endogeneity test (p-value): 0.052 (0.8201). Instruments used: unit labour cost (level/growth rate), election dummy, fertility rate, participation rate.

[b] LSDVC-Estimator; Arellano-Bond as consistent estimator to initialise bias correction; bootstrapped std. errors.

[c] R^2 in fixed-effects OLS estimations refers to R^2 (within) while R^2 in FE-IV estimation refers to centered R^2.

As hypothesised above, an increase of the replacement rate alleviates the income consequences of a potential job loss and lowers the future income uncertainty and hence the precautionary motive for saving. The following section provides some sensitivity checks of the findings.

4 Robustness Checks

I conduct four kinds of sensitivity checks to assess the robustness of the basic results. Firstly, first-year benefits have been used in the previous section as a measure for benefit generosity, arguing that the benefits in the first twelve months of unemployment are possibly more important to the households' saving behaviour than the average benefit generosity during the five years following a potential job loss. I re-estimate the models using the average gross replacement over three periods of unemployment including the benefits during the second/third and the fourth/fifth year of unemployment. Secondly, there are plausible reasons for differing reactions of saving behaviour to changes in benefits in different income groups. The dataset of the European Commission allows me to check this possibility by estimating models for each income quartile. Thirdly, the cross-sectional stability of the results is assessed to see if the results critically depend on the inclusion of certain countries. Finally, I check the stability of the long-run relationship by estimating an error-correction model based on equation (2) using the 'pooled mean group estimator' developed by Pesaran et al. [1999]. This estimator explicitly allows the use of nonstationary I(1) regressors and imposes less strict assumptions concerning the homogeneity of coefficients across countries.[15]

[15]Additionally, tables 9 and 10 in the appendix show that the results are robust to the inclusion of employment protection legislation (EPL) and expenditures on active labour market policies (ALMP) as two other important labour market institutions. However, the channels through which those (and perhaps other) labour market institutions affect the saving behaviour are not clear from a theoretical point of view. Before seriously going about empirical analyses on the influence of those institutions and possible interactions between them, more theoretical work needs to be done to clarify the relevant effects and to set up hypotheses substantiated by theory.

Average benefits

As a first sensitivity check, I use the OECD average gross replacement rate over three periods of unemployment as an alternative measure for benefit generosity, covering the first twelve months, the second/third year as well as the fourth/fifth year of unemployment. In section 2 it has been argued that the benefit generosity during the first year of unemployment is likely to have a larger influence on the households' saving behaviour than the summary measure of benefits, because (1) it represents the income replacement immediately after a potential job loss and (2) the expected duration of unemployment may not exceed one year because the median of unemployment duration in a large part of the sample amounts to 10.12 months. To check this, I re-estimate the basic specifications using the summary measure as a proxy for unemployment generosity. Table 3 reports the coefficients of the unemployment benefits as well as the interaction term for the full specifications including all controls from tables 1 and 2.

Although still significant in some specifications, the estimated coefficients suggest a smaller reaction of saving intentions to changes of the average replacement rate both concerning the direct effect and the joint direct and indirect effect. According to the dynamic specification in column (3), an increase of the average benefits by 10% reduces the saving intentions by 0.57 points in the short run and about 3.74 in the long run. Compared to the estimates using the first-year benefits only, the results here indicate that the average benefit generosity has a smaller and in some specifications even insignificant impact on the saving intentions of households. This may be interpreted as evidence that the benefit generosity in the initial period of unemployment alone indeed has a larger influence on the saving behaviour of the households than the average replacement rate. Further disentangling the various effects of changes in the benefit profile on (aggregate) saving behaviour of the households is beyond the scope of this paper and may be an interesting topic for further research.

Table 3: Robustness checks: average unemployment benefits

	Static model		Dynamic model		
	FE-OLS	IV-OLS[a]	FE-OLS	IV-OLS[b]	LSDVC[c]
UB	-0.409*	-0.464	-0.210**	-0.203*	-0.171
	(0.219)	(0.381)	(0.091)	(0.104)	(0.107)
UB*UR	-0.011	-0.015	0.018**	0.018*	0.017
	(0.027)	(0.032)	(0.007)	(0.009)	(0.014)
No. of observations	251	251	240	240	240
No. of countries	11	11	11	11	11

Remarks:
*,**,*** indicate significance at 10, 5 and 1 per cent respectively. Fixed country effects and common year effects included. Controls (not reported in the table): Growth rate of real GDP per capita, short term real interest rate, unemployment rate. All fixed-effects OLS estimations with Driscoll/Kraay std.errors robust to heteroscedasticity, autocorrelation and cross-sectional correlation. FE-IV estimation with heteroscedasticity and autocorrelation consistent standard errors. Robust std. errors in parentheses.
[a]Instruments used: unit labour costs (level/growth rate), election dummy, participation rate; Kleibergen-Paap statistic (underid. test): 8.515 (p-value: 0.0744), Hansen J-statistic (overid. test): 5.134 (p-value: 0.1622), Endogeneity test: χ^2: 0.014 (p-value: 0.907).
[b]Instruments used: unit labour costs (level/growth rate), election dummy, fertility rate, participation rate; Kleibergen-Paap statistic (underid. test): 7.851 (p-value: 0.165), Hansen J-statistic (overid. test): 3.871 (p-value: 0.4237), Endogeneity test: χ^2: 0.407 (p-value: 0.523).
[c] LSDVC-Estimator; Arellano-Bond as consistent estimator to initialise bias correction; bootstrapped std. errors.

Estimation by income quartiles

The analysis of the impact of unemployment insurance on aggregate saving intentions above implicitly assumes that reactions on saving behaviour are similar for different parts of the income distribution as well as other socio-economic variables. Although it is not possible to control these factors directly due to the lack of individual data, the EU Consumer Survey provides aggregate responses by income quartiles. It is hypothesised that the reaction of the saving behaviour to a given change in benefit generosity in the first income quartile is insignificant for two reasons. Firstly, households with low income may simply not have the financial scope to increase saving in case of a reduction of unemployment insurance and therefore to (partly) substitute public insurance by a private buffer stock. This may especially be the case for those who are already unemployed. Secondly, income is supposed to be closely related to wealth. Hubbard et al. [1995] suggests that households at the bottom of the wealth distribution may not have an incentive to save because they are most likely to depend on means-tested social insurance. Table 4 reports the estimates by income groups. The households in the first income quartile indeed show a smaller response of the saving intentions on unemployment benefits than those in the other parts of the income distribution.

Moreover, the coefficients are not significantly different from zero. With regard to the dynamic specifications, the highest short-run impact of unemployment insurance on the saving behaviour can be observed in the second and third quartile. Using the LSDVC estimator, only households in the second income quartile show a significant relationship to the benefits. The interaction effects have the expected sign but are not significantly different from zero in some specifications.

Cross-sectional stability

To test whether the basic results are stable to the exclusion of single countries from the sample, estimations based on subsamples are conducted by dropping one country

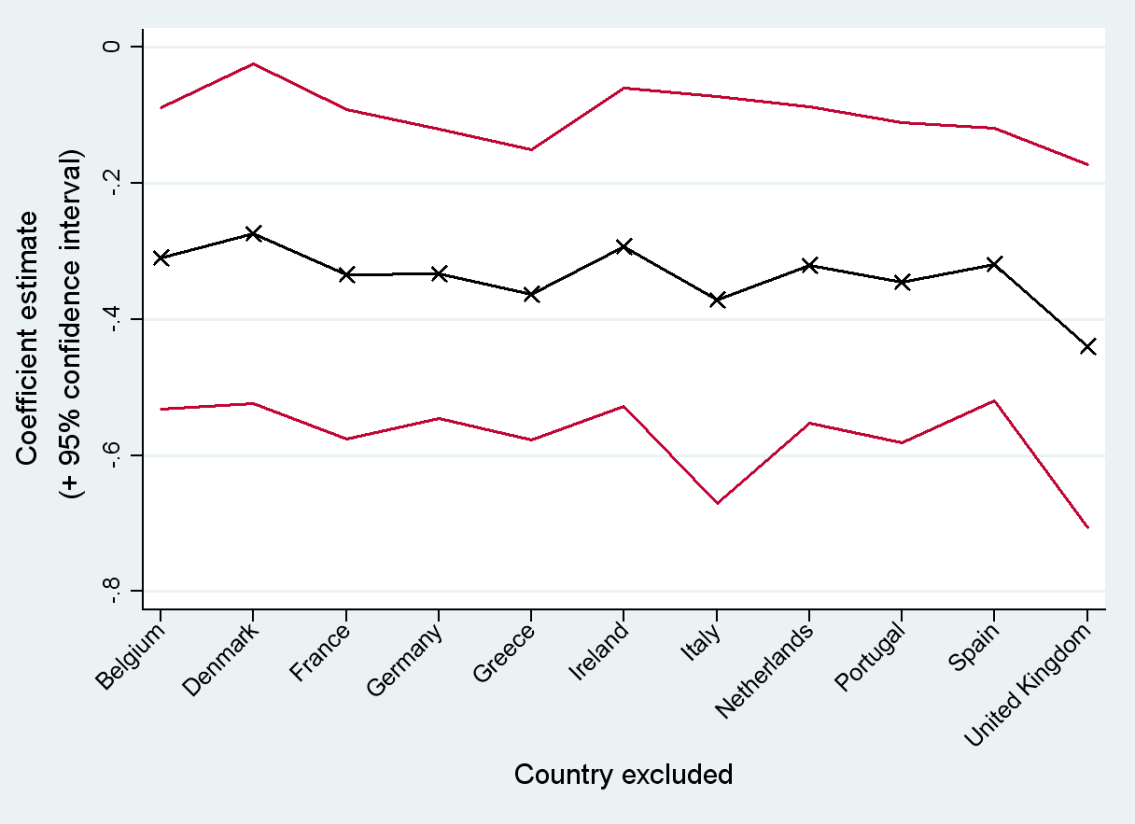
Table 4: Estimation by income quartiles

Income quartile		Static model		Dynamic model		
		FE-OLS	IV-OLS	FE-OLS	IV-OLS	LSDVC[a]
1^{st}	UB	-0.225	-0.235	-0.247	-0.244	-0.226
		(0.372)	(0.429)	(0.226)	(0.156)	(0.191)
	UB*UR	0.016	0.018	0.029	0.029**	0.028
		(0.034)	(0.034)	(0.017)	(0.013)	(0.018)
2^{nd}	UB	-0.744**	-0.753**	-0.420*	-0.433***	-0.363*
		(0.319)	(0.295)	(0.225)	(0.136)	(0.201)
	UB*UR	0.043	0.045*	0.027	0.028***	0.023
		(0.026)	(0.024)	(0.015)	(0.010)	(0.018)
3^{rd}	UB	-1.365***	-1.370***	-0.398**	-0.401**	-0.299
		(0.285)	(0.355)	(0.174)	(0.169)	(0.221)
	UB*UR	0.077***	0.078***	0.020*	0.020	0.014
		(0.015)	(0.026)	(0.010)	(0.013)	(0.020)
4^{th}	UB	-1.567***	-1.574***	-0.380***	-0.379**	-0.273
		(0.279)	(0.511)	(0.112)	(0.168)	(0.200)
	UB*UR	0.073***	0.075**	0.019	0.019	0.014
		(0.015)	(0.038)	(0.011)	(0.014)	(0.018)

Remarks:
*,**,*** indicate significance at 10, 5 and 1 per cent respectively. Fixed country effects and common year effects included. Controls (not reported in the table): Growth rate of real gdp per capita, short term real interest rate, unemployment rate. All fixed-effects OLS estimations with Driscoll/Kraay std.errors robust to heteroscedasticity, autocorrelation and cross-sectional correlation. FE-IV estimation with heteroscedasticity and autocorrelation consistent standard errors. Robust std. errors in parentheses. Full results are given in tables 11 and 12 in the appendix.
[a] LSDVC-Estimator; Arellano-Bond as consistent estimator to initialise bias correction; bootstrapped std. errors.

at a time. The estimates for both the static and dynamic models are presented in table 13 in the appendix. To illustrate the basic results, the estimates of the dynamic FE-OLS specification may serve as an example. Figures 1 and 2 show the point estimators as well as the 95%-confidence intervals for the unemployment benefits and the interaction term, respectively.

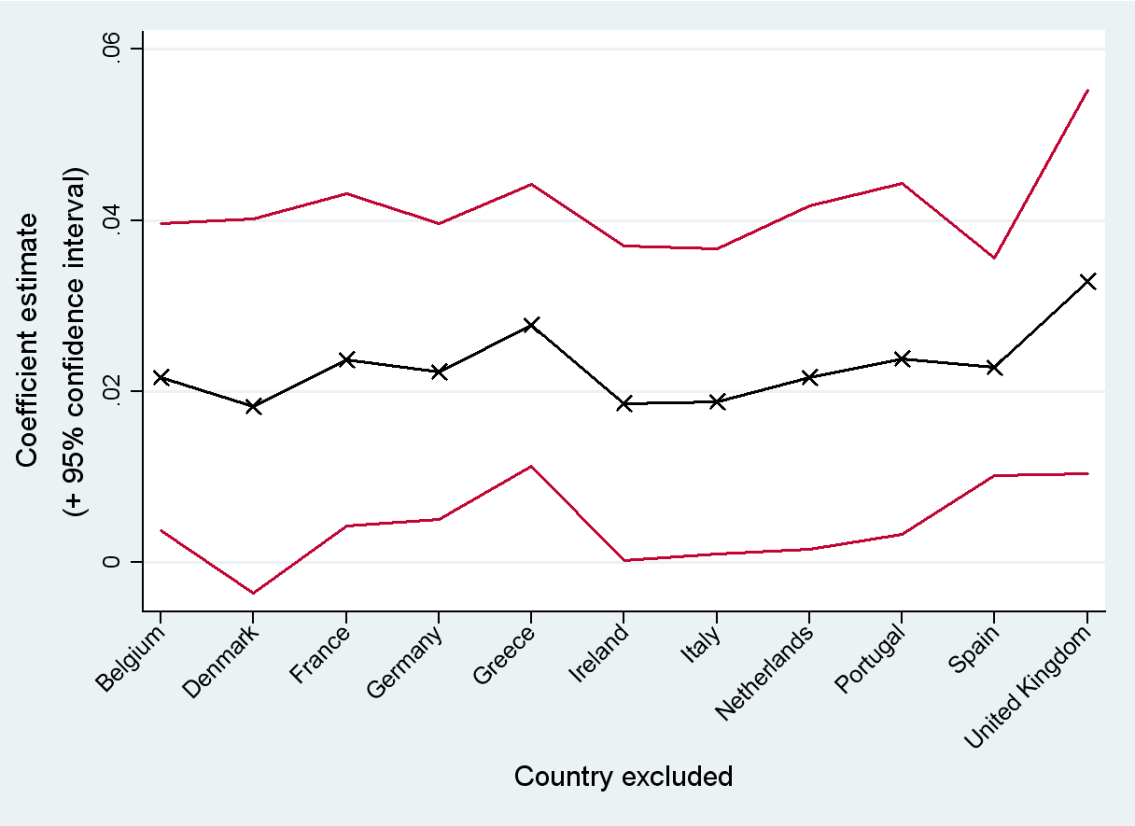
Figure 1: Cross-sectional stability: unemployment benefits



The level of the first-year benefits are found to significantly decrease saving intentions, irrespective of the country excluded from the panel. The point estimates basically fluctuate around the corresponding values of table 2 (third column) including all countries. A similar pattern can be observed for the interaction effect.

The coefficient estimates are significantly positive on a 5%-level, except when excluding Denmark (still significant on a 10%-level). Again, coefficients do not deviate severely from the regression including the full sample of countries. Holding

Figure 2: Cross-sectional stability: interaction term



the unemployment rate constant at an average level, the net effect of an increase of the replacement rate by 10% on saving intentions is between -1.151 and -1.114 in the short-run and between -8.879 and -3.962 in the long-run. The patterns shown in the figures generally hold true for the other static and dynamic specifications. Unemployment benefits are always found to significantly decrease saving intentions, the interaction term is significant at least on a 10%-level in 7 to 11 out of all 11 regressions. Although the main result is therefore qualitatively stable to the dropping of individual countries from the sample, the point estimates exhibit some variation. This indicates that the reaction of saving behaviour to changes in unemployment insurance as well as in the other variables included in the regressions may differ across countries. To fully capture the heterogeneity of the countries, separate estimates for each country would be needed. Unfortunately, the time dimension of the panel is to

short to obtain reliable estimates. As soon as there are sufficient data, identifying the full heterogeneity between the countries will surely be an important issue for future research.

Pooled mean group estimation

As an intermediate alternative between a separate estimation for each country and a pooled estimation that assumes homogeneity of the short-run as well as of long-run coefficients, Pesaran et al. [1999] suggest the 'pooled mean group (PMG) estimator' for the estimation of the long-run relationships in heterogeneous panels. This technique is based on the error-correction form of dynamic panel data models and relies on less restrictive assumptions concerning the homogeneity of parameters. It allows heterogeneous intercepts, short-run coefficients and speeds of adjustment to the long-run equilibrium and assumes only homogeneity of the long-run coefficients. In addition to that, the PMG estimator explicitly allows for nonstationarity in the data as long as a long-run relationship between the dependent variable and the regressors exists.[16] To set out the model underlying the PMG estimator more clearly, I start with the unrestricted version of the autoregressive distributed lag model (ARDL) presented in section 2 without fixed year effects (see e.g. Pesaran et al. [1999] or Asteriou [2009] for this proceeding).

$$\begin{aligned} SI_{i,t} &= \delta_i SI_{i,t-1} + \beta_{1i} UB_{i,t} + \beta_{2i} UR_{i,t} + \beta_{3i}(UB * UR)_{i,t} + \\ &\quad + \gamma_{1i} INT_{i,t} + \gamma_{2i} WGDP_{i,t} + \mu_i + \epsilon_{i,t} \end{aligned} \tag{3}$$

[16] In the appendix (tables 14 and 15), I report some panel unit root tests and Pedroni's cointegration test which are often applied in recent research (see e.g. Lee [2006] for a dataset with similar panel dimensions (N=16, T=20)). Details of the tests are outlined e.g. in Baltagi [2005, 239ff], and I take into account possible cross-sectional correlation of the data. The test statistics indicate that the variables may be treated as integrated of order one (I(1)) and that a cointegration relationship exists.

This can be reparameterised into the following error-correction form:

$$\begin{aligned}\Delta SI_{i,t} &= \phi_i(SI_{i,t-1} - \theta_{1i}UB_{i,t} - \theta_{2i}UR_{i,t} - \theta_{3i}(UB*UR)_{i,t} - \\ &\quad -\theta_{4i}INT_{i,t} - \theta_{5i}WGDP_{i,t}) + \mu_i + \epsilon_{i,t} \qquad (4)\end{aligned}$$

where $\phi_i = -(1-\delta_i)$, $\theta_{ji} = \frac{\beta_{ji}}{1-\delta_i}$ for $j = 1,2,3$, and $\theta_{k+3,i} = \frac{\gamma_{ki}}{1-\delta_i}$ for $k = 1,2$. ϕ_i is the error-correction term and represents the speed of adjustment to the long-run equilibrium. Assuming that a long-run relationship between the variables exists, the parameter is expected to be significantly negative. If ϕ_i equals zero, then the existence of a long-run relationship is not supported by the data. The PMG estimator now restricts the long-run coefficients to be the same, so equation 4 becomes

$$\begin{aligned}\Delta SI_{i,t} &= \phi_i(SI_{i,t-1} - \theta_1 UB_{i,t} - \theta_2 UR_{i,t} - \theta_3(UB*UR)_{i,t} - \\ &\quad -\theta_4 INT_{i,t} - \theta_5 WGDP_{i,t}) + \mu_i + \epsilon_{i,t} \qquad (5)\end{aligned}$$

Pesaran et al. [1999] propose a maximum likelihood approach for the estimation of parameters.[17] Following Loayza and Ranciere [2005][11], cross-country common factors are eliminated by substracting the cross-sectional means for each period from the data (demeaning) which is equivalent to the inclusion of time-specific intercepts.[18] In addition to the ARDL(1,0,0,0,0,0) without additional lags of the exogenous regressors, the following ARDL(1,1,1,1,1,1) including one lag of each regressor is estimated as a further sensitivity check.

$$\begin{aligned}\Delta SI_{i,t} &= \phi_i(SI_{i,t-1} - \theta_1 UB_{i,t} - \theta_2 UR_{i,t} - \theta_3(UB*UR)_{i,t} - \\ &\quad - \theta_4 INT_{i,t} - \theta_5 WGDP_{i,t}) + \zeta_{1i}\Delta UB_{i,t} + \zeta_{2i}\Delta UR_{i,t} + \\ &\quad + \zeta_{3i}\Delta(UB*UR)_{i,t} + \zeta_{4i}\Delta INT_{i,t} + \zeta_{5i}\Delta WGDP_{i,t} + \mu_i + \epsilon_{i,t} \qquad (6)\end{aligned}$$

[17] The PMG estimator is implemented in STATA's 'xtpmg' command, developed by Blackburn and Frank [2007].

[18] This approach is adopted since the PMG estimator does not converge when including year dummies.

Table 5 gives PMG estimates of the long-run coefficients for both models. As would have been expected for cointegrated I(1) variables, the error-correction term is estimated to be significantly negative. Again, the unemployment benefits are found to significantly decrease saving intentions. The direct effect of a change in unemployment benefits by 10 percentage points on saving intentions is -17.16 points (-13.48 in specification (2)). Taking into account the interaction term, the net effect of such a change holding constant the unemployment rate at an average level is estimated to be -6.03 points (-3.96 in specification (2)). Thus, the basic results still hold for less strict homogeneity assumptions.[19]

Table 5: Pooled mean group estimation

Variable	(1)	(2)
Unemployment benefits (UB)	-1.716***	-1.348***
	(0.451)	(0.331)
Unemployment rate (UR)	-7.881***	-6.791***
	(2.278)	(1.767)
UB*UR	0.131***	0.112***
	(0.045)	(0.037)
Real GDP per capita (growth rate)	370.196***	221.369***
	(86.216)	(60.829)
Short term real interest rate	1.331	0.172
	(0.835)	(0.530)
(Average) Speed of adjustment ϕ	-0.261***	-0.363***
	(0.041)	(0.087)
No. of observations	218	218
No. of countries	11	11

Remarks:
*,**,*** indicate significance at 10, 5 and 1 per cent respectively. Std.errors in parentheses. The table gives the common long-run relationships between saving intention and the included variables. Specification (1) refers to an ARDL(1,0,0,0,0,0) model, specification (2) refers to an ARDL(1,1,1,1,1,1) model including one lag of each right-hand side variable. Common year effects and fixed country effects included.

[19]Table 16 in the appendix gives the full results of the PMG estimators with and without controlling common year effects.

5 Conclusions

The empirical evidence presented in this paper strongly suggests that the generosity of unemployment insurance affects the households' saving behaviour. Based on survey data on saving intentions in 11 European countries, the income replacement rate in case of unemployment is found to significantly reduce the propensity to save. This finding is basically in line with the theoretical prediction from the precautionary savings literature and some related empirical evidence (Engen and Gruber [2001], Lollivier and Rioux [2006] and Clark and Postel-Vinay [2009]). Unemployment insurance is supposed to cushion an income drop in case of a job loss, and hence reduces income uncertainty and the need to save for precautionary reasons. Furthermore, unemployment benefits are likely to counterbalance a negative expected income effect from high unemployment rates, and therefore contribute to a stabilisation of expectations and in the end perhaps aggregate consumption. Although significant, the overall effect of a change in unemployment benefits by 10 percentage points amounts to about one half of the average standard deviation in saving intentions. Again, this result is consistent with the literature which attaches only small to medium importance to precautionary savings as a determinant of overall savings of a household. The estimates in this study are based on aggregate panel data. The evidence presented here might therefore be regarded as suggestive evidence for the influence of unemployment insurance on saving behaviour of the individual household. The robustness checks may provide some indications for a refinement of the results and may point out directions for future research. Firstly, saving behaviour of households at the bottom of the income distribution is not significantly influenced by the replacement rate. This may be due to the lack of financial scope to save after having paid for basic necesseties or little overall incentives to accumulate assets because of means-tested social insurance. In any case, future theoretical as well as empirical work should take such constraints at lower incomes into account. Secondly, although the basic result is robust to the exclusion

of individual countries and the long-run effect of the benefits on saving intentions can still be maintained under less strict homogeneity assumptions, the time dimension of the panel is insufficient to detect differing reactions in the countries. With adequate oberservations over time, the question of heterogeneity may be tackled in the next years. Furthermore, other labour market institutions as well as interactions between them may possibly affect a household's income uncertainty and saving behaviour. Before seriously going about empirical analyses on those topics, more theoretical work needs to be done to clarify the relevant effects and to set up hypotheses substantiated by theory.

A Appendix

A.1 Data

Table 6 gives the sources of the variables used in this study. Additionally, detailed definitions are reported for those variables that are not directly adopted from the cited sources. Descriptive statistics can be found in table 7. The means of saving intentions across countries itself suggest the inclusion of fixed country effects to take into account potential unobserved heterogeneity.

Data on Consumer Confidence are taken from the EU Commission's Consumer Survey. Methods of collecting data are similar across the countries under consideration to ensure comparability. With the exception of Germany and Portugal where the interviews are conducted as computer assisted face-to-face interviews, the data are collected by telephone interviews. Representative samples are drawn each month, including between 1400 (IRL) and 3300 (FR) subjects. The minimum age of interviewees is between 14 and 18, and except for Denmark (74) there is no maximum age. The questionnaires are harmonised, although the national survey organisations are allowed to integrate the Consumer Survey into a more comprehensive survey. In all countries the data are collected in the first half of each month.
Additional and more detailed information is available via the Commission's website: http://ec.europa.eu/economy_finance/db_indicators/surveys/documents/metadata/cons_metadata_all.pdf.

Table 6: Sources and definitions

Series	**Data and Definitions**
Election dummy	National elections; Source: www.parties-and-elections.de (last update: Januar 2011)
Fertility rate	OECD Health Statistics/Gender, Institutions and Development Database
Growth rate of real GDP per capita	OECD Economic Outlook Database (No. 85)
Interest rates (real)	OECD Economic Outlook Database (No. 85)
Short term (90days)	r = $\left(\frac{\frac{1+i}{100}}{\frac{1+\pi}{100}} - 1\right) * 100$ with π as the CPI inflation rate
Participation rate	Total labour force in % of population; Source: OECD Annual Labour Force Statistics
Saving intention (SI)	European Commision, DG Ecofin, Consumer Survey, Question 11, Saving over next 12 month
Unemployment benefits	Gross replacement rate; OECD, Tax benefit models. Data available for uneven years; data for even years are obtained by linear interpolation (see e.g. Di Tella and MacCulloch [2004]).
Unemployment rate	OECD Economic Outlook Database (No. 85)
Unit labour costs	level and annual growth rate; OECD Database: Unit labour costs - annual indicators

A.2 Tables

Table 7: Descriptive statistics

Variable		Mean	Std.dev.	Min	Max	Obs.
Total Sample						
Saving intention	overall	-7.012	24.555	-55.983	49	218
	between		23.352			
	within		10.221			
Saving intention	overall	-36.860	22.467	-83.408	17.617	210
(1^{st} income quartile)	between		18.859			
	within		13.110			
Saving intention	overall	-14.386	27.881	-70.467	49.442	210
(2^{nd} income quartile)	between		26.325			
	within		11.251			
Saving intention	overall	4.125	31.370	-75.033	69.650	210
(3^{rd} income quartile)	between		29.747			
	within		12.437			
Saving intention	overall	15.302	30.284	-45	77.483	210
(4^{th} income quartile)	between		25.377			
	within		17.619			
Unemployment rate	overall	8.499	3.199	2.533	19.108	218
	between		2.447			
	within		2.209			
Real short term interest rate	overall	3.434	2.663	-3.671	10.925	218
	between		0.579			
	within		2.605			
Av. unemployment benefits	overall	32.922	13.997	0.347	64.944	218
	between		13.642			
	within		4.949			
First-year benefits	overall	48.728	19.089	1.042	75.5	218
	between		18.196			
	within		7.873			
Real GDP per cap.	overall	0.023	0.022	-0.983	0.103	218
(growth rate)	between		0.011			

Continues on next page

Table 7: ...continued

Variable	Mean	Std.dev.	Min	Max	Obs.
within		0.019			
By country					
Belgium					
Saving intention	10.065	7.919	-8.608	23.992	20
1^{st} quartile	-25.610	10.659	-43.117	0.517	
2^{nd} quartile	1.398	10.471	-26.967	14.925	
3^{rd} quartile	27.093	17.284	-14.583	50.408	
4^{th} quartile	36.266	25.847	-11.157	68.558	
Unemployment rate	8.344	1.210	6.448	10.058	
Real short term interest rate	3.319	2.362	-0.597	6.778	
Av. unemployment benefits	40.601	1.436	38.488	42.806	
First-year benefits	47.112	1.842	44.410	50.167	
Real GDP per cap. (growth rate)	0.020	0.013	-0.014	0.044	
Denmark					
Saving intention	17.053	14.572	-6.858	36.85	20
1^{st} quartile	-2.544	20.912	-43.883	17.617	
2^{nd} quartile	9.412	14.968	-16.458	27.842	
3^{rd} quartile	30.406	11.596	9.3	49.625	
4^{th} quartile	35.912	22.374	-6.683	60.492	
Unemployment rate	5.998	1.515	4.258	9.540	
Real short term interest rate	3.671	2.858	0.282	9.049	
Av. unemployment benefits	54.412	5.414	49.4	64.944	
First-year benefits	69.545	4.954	63.057	75.5	
Real GDP per cap. (growth rate)	0.017	0.016	-0.004	0.052	
France					
Saving intention	-23.828	6.016	-33.008	-11.658	20
1^{st} quartile	-52.355	7.652	-63.229	-34.842	
2^{nd} quartile	-29.327	6.840	-43.608	-17.233	
3^{rd} quartile	-11.585	7.173	-20.883	3.242	
4^{th} quartile	-3.673	19.753	-42.971	19.608	
Unemployment rate	9.147	0.994	7.773	10.755	

Continues on next page

Table 7: ...continued

Variable	Mean	Std.dev.	Min	Max	Obs.
Real short term interest rate	3.670	2.318	-0.028	7.751	
Av. unemployment benefits	38.153	1.845	36.014	43.528	
First-year benefits	59.350	1.191	57.875	61.382	
Real GDP per cap. (growth rate)	0.017	0.013	-0.013	0.039	
Germany					
Saving intention	8.231	5.894	-1.608	19.992	20
1^{st} quartile	-17.851	8.055	-35.817	-8.9	
2^{nd} quartile	5.088	8.212	-13.742	15.358	
3^{rd} quartile	17.979	9.700	2.342	31.492	
4^{th} quartile	28.978	8.536	18.643	43.425	
Unemployment rate	7.471	1.719	4.470	10.530	
Real short term interest rate	2.812	1.429	0.448	5.659	
Av. unemployment benefits	27.409	1.323	24.171	29.407	
First-year benefits	37.784	1.380	35.392	39.997	
Real GDP per cap. (growth rate)	0.009	0.028	-0.098	0.035	
Greece					
Saving intention	-44.837	7.038	-55.983	-31.842	20
1^{st} quartile	-63.274	15.587	-83.408	-32.392	
2^{nd} quartile	-54.181	10.181	-70.467	-35.492	
3^{rd} quartile	-44.093	16.820	-75.033	-11.475	
4^{th} quartile	-18.491	12.786	-45.0	0.0	
Unemployment rate	9.681	1.400	7.426	12.096	
Real short term interest rate	2.915	3.173	-3.671	7.621	
Av. unemployment benefits	12.653	2.988	7.333	17.111	
First-year benefits	33.461	6.805	22.0	43.917	
Real GDP per cap. (growth rate)	0.20	0.022	-0.025	0.052	
Ireland					
Saving intention	-5.726	19.021	-30.15	21.983	20
1^{st} quartile	-45.619	15.886	-64.575	-21.542	
2^{nd} quartile	-23.394	16.299	-45.792	5.483	
3^{rd} quartile	8.332	16.822	-20.983	34.033	

Continues on next page

Table 7: ...continued

Variable	Mean	Std.dev.	Min	Max	Obs.
4^{th} quartile	22.567	24.960	-26.442	51.492	
Unemployment rate	10.656	5.132	3.865	17.150	
Real short term interest rate	3.792	3.737	-1.262	10.925	
Av. unemployment benefits	29.483	1.772	26.264	33.684	
First-year benefits	39.703	5.196	31.625	50.292	
Real GDP per cap. (growth rate)	0.053	0.030	-0.005	0.103	
Italy					
Saving intention	-13.926	9.255	-36.25	-0.608	20
1^{st} quartile	-49.830	4.192	-59.642	-43.883	12
2^{nd} quartile	-29.388	7.718	-49.458	-19.217	12
3^{rd} quartile	-2.657	10.694	-39.0	1.525	12
4^{th} quartile	11.622	9.596	-10.358	22.95	12
Unemployment rate	9.873	1.191	7.778	11.502	20
Real short term interest rate	3.814	2.589	-0.330	8.305	
Av. unemployment benefits	18.633	13.530	0.347	34.458	
First-year benefits	28.164	23.979	1.042	59.5	
Real GDP per cap. (growth rate)	0.017	0.013	-0.002	0.041	
Netherlands					
Saving intention	-34.159	10.081	11.917	49.0	20
1^{st} quartile	-16.558	16.750	-43.067	13.333	
2^{nd} quartile	37.803	8.183	17.971	49.442	
3^{rd} quartile	59.191	5.723	45.508	69.65	
4^{th} quartile	58.320	23.112	8.9	77.483	
Unemployment rate	5.590	1.800	2.533	8.439	
Real short term interest rate	2.845	2.387	0.031	6.239	
Av. unemployment benefits	52.025	4.679	35.235	56.706	
First-year benefits	70.614	0.809	70.0	72.5	
Real GDP per cap. (growth rate)	0.021	0.013	-0.006	0.040	
Portugal					
Saving intention	-33.214	8.134	-51.792	-22.108	19
1^{st} quartile	-49.787	9.424	-68.883	-29.792	

Continues on next page

Table 7: ...continued

Variable	Mean	Std.dev.	Min	Max	Obs.
2^{nd} quartile	-39.788	12.723	-62.483	-22.667	
3^{rd} quartile	-28.582	15.887	-54.875	-0.708	
4^{th} quartile	-23.267	11.902	-40.667	-1.05	
Unemployment rate	5.696	1.259	3.957	7.655	
Real short term interest rate	2.666	2.438	-0.903	6.562	
Av. unemployment benefits	36.842	4.078	30.722	44.5	
First-year benefits	65.616	2.344	60	69.999	
Real GDP per cap. (growth rate)	0.028	0.027	-0.022	0.076	
Spain					
Saving intention	-21.296	8.745	-33.267	-4.583	19
1^{st} quartile	-47.725	9.437	-63.058	-23.925	
2^{nd} quartile	-30.459	11.856	-43.258	-4.767	
3^{rd} quartile	-17.407	10.068	-30.908	1.733	
4^{th} quartile	-5.825	12.932	-28.592	14.533	
Unemployment rate	13.679	3.086	9.157	19.108	
Real short term interest rate	3.668	3.477	-1.146	10.047	
Av. unemployment benefits	35.711	2.224	31.667	39.038	
First-year benefits	66.433	3.162	62.887	71.5	
Real GDP per cap. (growth rate)	0.027	0.017	-0.013	0.053	
United Kingdom					
Saving intention	-5.836	10.653	-20.508	15.117	20
1^{st} quartile	-40.689	16.177	-60.433	-7.957	
2^{nd} quartile	-13.488	13.681	-37.283	-16.383	
3^{rd} quartile	7.272	11.077	-13.25	25.367	
4^{th} quartile	21.451	10.796	-9.757	37.358	
Unemployment rate	7.479	2.131	4.763	11.324	
Real short term interest rate	4.581	1.682	2.272	8.216	
Av. unemployment benefits	16.559	2.423	12.349	19.674	
First-year benefits	19.960	3.608	14.249	24.021	
Real GDP per cap. (growth rate)	0.025	0.015	-0.017	0.048	

Table 8: Diagnostic statistics

	Table 1			Table 2		
Specification	(1)	(2)	(3)	(1)	(2)	(3)
Breusch-Pagan χ^2-test	174.505	169.071	175.633	70.570	69.627	65.787
(cross-sectional corr.)	(0.0000)	(0.0000)	(0.0000)	(0.0769)	(0.0886)	(0.1514)
Wooldrigde F-test	31.974	280.294	476.610	11.366	11.944	11.892
(autocorrelation)	(0.0002)	(0.0000)	(0.0000)	(0.0071)	(0.0062)	(0.0062)
Wald χ^2-test	68.67	22.56	22.56	43.41	32.03	27.81
(heteroscedasticity)	(0.0000)	(0.0204)	(0.0204)	(0.0000)	(0.0000)	(0.0035)

Remarks:
p-values in parentheses. Breusch-Pagan test for cross-sectional correlation in fixed effects models is implemented in STATA ('xttest2' command). The Wooldridge test for serial correlation in the idiosyncratic errors is implemented in STATA's 'xtserial' command (see Drukker [2003]).

Table 9: Additional controls: employment protection legislation (EPL)

	Static model			Dynamic model		
Variables	(1)	(2)	(3)	(4)[a]	(5)	(6)[a]
Saving intention (lagged)			0.754***	0.822***	0.754***	0.822***
			(0.033)	(0.056)	(0.033)	(0.056)
Unemployment benefits (UB)	-0.863***	-0.909***	-0.303**	-0.261**	-0.298**	-0.259**
	(0.209)	(0.217)	(0.100)	(0.115)	(0.129)	(0.131)
Unemployment rate (UR)	-4.039***	-4.023***	-1.444**	-1.259**	-1.447**	-1.245**
	(1.181)	(1.175)	(0.554)	(0.518)	(0.554)	(0.523)
UB*UR	0.047**	0.052**	0.022**	0.019**	0.021*	0.019*
	(0.021)	(0.021)	(0.008)	(0.009)	(0.010)	(0.011)
Real GDP per capita	124.664**	126.009**	94.463***	93.315***	94.355***	93.707***
(growth rate)	(41.221)	(41.175)	(16.418)	(21.140)	(16.663)	(21.290)
Short term real interest rate	-0.113	-0.086	0.350*	0.399	0.346*	0.397
	(0.221)	(0.234)	(0.170)	(0.251)	(0.174)	(0.245)
EPL	-0.544	0.763	0.927	0.779	0.794	0.768
	(2.242)	(2.381)	(1.171)	(1.209)	(1.939)	(2.251)
EPL*UR		-0.127			0.013	-0.001
		(0.205)			(0.163)	(0.196)
Constant	35.921***	35.196**	9.394		9.468	
	(11.427)	(11.242)	(7.381)		(7.277)	
No. of observations	229	229	218	218	218	218
No. of countries	11	11	11	11	11	11
within R^2	0.649	0.650	0.852		0.852	

Remarks:
*,**,*** indicate significance at 10, 5 and 1 per cent respectively. Fixed year effects and common year effects included. All fixed-effects OLS estimations with Driscoll/Kraay std.errors robust to heteroscedasticity, autocorrelation and cross-sectional correlation (spec. (1),(2),(3),(5)). FE-IV estimation results are not qualitatively different and are not reported here. Robust std. errors in parentheses.
[a] LSDVC-Estimator; Arellano-Bond as consistent estimator to initialise bias correction; bootstrapped std. errors.
Data source: EPL; OECD index for Employment Protection Legislation (Version 1: 1985-2008 comparable series).

Table 10: Additional controls: active labour market policies (ALMP)

	Static model		Dynamic model			
Variables	(1)	(2)	(3)	(4)[a]	(5)	(6)[a]
Saving intention (lagged)			0.734***	0.808***	0.723***	0.797***
			(0.039)	(0.066)	(0.047)	(0.067)
Unemployment benefits (UB)	-0.920***	-0.924***	-0.342**	-0.286**	-0.353**	-0.296**
	(0.217)	(0.228)	(0.117)	(0.125)	(0.123)	(0.126)
Unemployment rate (UR)	-4.388***	-4.149***	-1.698**	-1.481***	-1.685**	-1.465***
	(1.140)	(1.137)	(0.577)	(0.508)	(0.580)	(0.503)
UB*UR	0.062***	0.061**	0.027**	0.024**	0.028**	0.024**
	(0.019)	(0.020)	(0.010)	(0.010)	(0.010)	(0.010)
Real GDP per capita	148.447***	150.961***	100.381***	99.313***	101.725***	100.670***
(growth rate)	(33.803)	(28.263)	(16.274)	(21.627)	(16.149)	(21.649)
Short term real interest rate	-0.115	0.048	0.396**	0.443*	0.422**	0.466*
	(0.253)	(0.260)	(0.144)	(0.265)	(0.145)	(0.268)
ALMP	0.024**	-0.014	0.006	0.005	-0.002	-0.003
	(0.009)	(0.012)	(0.004)	(0.005)	(0.007)	(0.010)
ALMP*UR		0.015***			0.003	0.003
		(0.005)			(0.003)	(0.003)
Constant	34.188***	28.908**	12.910*		11.854*	
	(11.622)	(12.185)	(5.933)		(6.076)	
No. of observations	222	222	213	213	213	213
No. of countries	11	11	11	11	11	11
within R^2	0.673	0.688	0.853		0.854	

Remarks:
*,**,*** indicate significance at 10, 5 and 1 per cent respectively. Fixed year effects and common year effects included. All fixed-effects OLS estimations with Driscoll/Kraay std.errors robust to heteroscedasticity, autocorrelation and cross-sectional correlation (spec. (1),(2),(3),(5)). FE-IV estimation results are not qualitatively different and are not reported here. Robust std. errors in parentheses.
[a] LSDVC-Estimator; Arellano-Bond as consistent estimator to initialise bias correction; bootstrapped std. errors.
Data source: ALMP; CEP-OECD Dataset (see Nickell [2006]): Expenditures on active labour market policies (without wages of state employees) per unemployed individual normalised on GDP per member of the labour force.

Table 11: Estimation by income quartiles (static model)

	FE-OLS				IV-OLS			
Variables	1^{st}	2^{nd}	3^{rd}	4^{th}	1^{st}	2^{nd}	3^{rd}	4^{th}
Unemployment benefits (UB)	-0.225	-0.744*	-1.365***	-1.567***	-0.235	-0.753**	-1.370***	-1.547***
	(0.372)	(0.319)	(0.285)	(0.279)	(0.429)	(0.295)	(0.355)	(0.511)
Unemployment rate (UR)	-2.280	-3.659*	-4.926***	-4.681***	-2.363	-3.735***	-4.970***	-4.741**
	(2.043)	(1.671)	(1.095)	(0.944)	(1.499)	(1.234)	(1.378)	(1.906)
UB*UR	0.016	0.043	0.077***	0.073***	0.018	0.045*	0.078***	0.075**
	(0.034)	(0.026)	(0.015)	(0.015)	(0.034)	(0.024)	(0.026)	(0.038)
Real GDP per capita	148.025**	96.499*	29.462	97.459	342.895	276.346	132.851	239.439
(growth rate)	(61.481)	(45.412)	(46.211)	(60.436)	(221.330)	(196.082)	(176.125)	(154.781)
Interest rate (real)	0.730	0.768	0.080	-1.490*	0.676	0.718	0.051	-1.529**
	(0.498)	(0.512)	(0.463)	(0.671)	(0.446)	(0.555)	(0.679)	(0.738)
No. of observations	212	212	212	212	212	212	212	212
No. of countries	11	11	11	11	11	11	11	11
R^2	0.408	0.370	0.360	0.628	0.358	0.313	0.345	0.614
Kleibergen-Paap (p-value)					0.115	0.115	0.115	0.115
Hansen J-statistic					0.835	0.094	0.111	0.032

Remarks:
*,**,*** indicate significance at 10, 5 and 1 per cent respectively. All OLS estimations with Driscoll/Kraay std. errors robust to heteroscedasticity, cross-sectional correlation and autocorrelation. IV estimations with heteroscedasticity consistent standard errors. Fixed country effects and common year effects included. Robust std. errors in parentheses.

Table 12: Estimation by income quartiles (dynamic model)

	FE-OLS				IV-OLS			
Variables	1^{st}	2^{nd}	3^{rd}	4^{th}	1^{st}	2^{nd}	3^{rd}	4^{th}
Saving intention (lagged)	0.683***	0.685***	0.767***	0.785***	0.658***	0.648***	0.760***	0.777***
	(0.055)	(0.082)	(0.117)	(0.089)	(0.059)	(0.064)	(0.053)	(0.053)
Unemployment benefits (UB)	-0.247	-0.420*	-0.398**	-0.380***	-0.244	-0.433***	-0.401**	-0.379**
	(0.226)	(0.225)	(0.174)	(0.112)	(0.156)	(0.134)	(0.169)	(0.168)
Unemployment rate (UR)	-2.169*	-1.965*	-1.409	-0.990	-2.246***	-2.142***	-1.478**	-1.080
	(0.977)	(0.888)	(0.880)	(0.642)	(0.662)	(0.520)	(0.635)	(0.683)
UB*UR	0.029	0.027	0.020*	0.019	0.029**	0.028***	0.020	0.019
	(0.017)	(0.015)	(0.010)	(0.011)	(0.013)	(0.010)	(0.013)	(0.014)
Real GDP per capita	80.858**	52.590	33.048	87.010*	155.588**	179.633*	114.748	219.995**
(growth rate)	(27.802)	(31.451)	(31.955)	(41.227)	(77.017)	(94.685)	(82.816)	(98.281)
Interest rate (real)	0.542	0.527	0.148	0.157	0.534	0.522	0.138	0.132
	(0.314)	(0.375)	(0.369)	(0.376)	(0.358)	(0.391)	(0.423)	(0.433)
Constant	1.134	16.352	22.652**	17.367**				
	(11.993)	(11.993)	(9.621)	(5.809)				
No. of observations	201	201	201	201	201	201	201	201
No. of countries	11	11	11	11	11	11	11	11
R^2	0.740	0.669	0.712	0.858	0.733	0.643	0.703	0.844
Kleibergen-Paap (p-value)					0.0685	0.184	0.125	0.090
Hansen J-statistic					0.329	0.237	0.294	0.488

Remarks:
*,**,*** indicate significance at 10, 5 and 1 per cent respectively. All OLS estimations with Driscoll/Kraay std. errors robust to heteroscedasticity, cross-sectional correlation and autocorrelation. IV estimations with heteroscedasticity consistent standard errors. Fixed country effects and common year effects included. Robust std. errors in parentheses.

Table 12: Estimation by income quartiles (dynamic model)[continued]

	LSDVC			
Variables	1^{st}	2^{nd}	3^{rd}	4^{th}
Saving intention (lagged)	0.751***	0.768***	0.860***	0.856***
	(0.056)	(0.063)	(0.065)	(0.050)
Unemployment benefits (UB)	-0.226	-0.363*	-0.299	-0.273
	(0.191)	(0.201)	(0.221)	(0.200)
Unemployment rate (UR)	-2.051**	-1.687*	-1.070	-0.664
	(0.858)	(0.903)	(0.999)	(0.854)
UB*UR	0.028	0.023	0.014	0.014
	(0.018)	(0.018)	(0.020)	(0.018)
Real GDP per capita	78.666**	52.496	33.402	85.191***
(growth rate)	(108.890)	(35.348)	(36.944)	(32.758)
Interest rate (real)	0.538	0.521	0.156	0.239
	(0.398)	(0.400)	(0.412)	(0.380)
Constant				
No. of observations	201	201	201	201
No. of countries	11	11	11	11

Remarks:
*,**,*** indicate significance at 10, 5 and 1 per cent respectively. LSDVC-Estimator; Arellano-Bond as consistent estimator to initialise bias correction; bootstrapped std. errors. in parentheses.

Table 13: Cross-sectional stability

Country excluded		Static model FE-OLS		Static model IV-OLS		Dynamic model FE-OLS		Dynamic model IV-OLS		Dynamic model LSDVC[a]	
Belgium	UB	-0.834***	(0.229)	-0.834***	(0.253)	-0.310**	(0.098)	-0.308***	(0.071)	-0.258***	(0.098)
	UB*UR	0.046*	(0.021)	0.046**	(0.023)	0.022**	(0.008)	0.021***	(0.007)	0.019**	(0.009)
Denmark	UB	-0.660**	(0.258)	-0.661***	(0.233)	-0.274**	(0.110)	-0.279***	(0.057)	-0.232**	(0.097)
	UB*UR	0.034	(0.025)	0.031	(0.023)	0.018*	(0.010)	0.019***	(0.006)	0.016*	(0.009)
France	UB	-0.876***	(0.224)	-0.876***	(0.245)	-0.334**	(0.107)	-0.335***	(0.071)	-0.285***	(0.109)
	UB*UR	0.049**	(0.022)	0.049**	(0.023)	0.024**	(0.009)	0.024***	(0.007)	0.021**	(0.010)
Germany	UB	-0.848***	(0.216)	-0.851***	(0.234)	-0.333***	(0.094)	-0.333***	(0.098)	-0.277***	(0.098)
	UB*UR	0.044*	(0.022)	0.043**	(0.022)	0.022**	(0.008)	0.022***	(0.008)	0.019**	(0.009)
Greece	UB	-0.917***	(0.249)	-0.875***	(0.233)	-0.363***	(0.094)	-0.361***	(0.065)	-0.312***	(0.094)
	UB*UR	0.051*	(0.023)	0.052**	(0.021)	0.028***	(0.007)	0.029***	(0.005)	0.025***	(0.009)
Ireland	UB	-0.810***	(0.216)	-0.812***	(0.245)	-0.294**	(0.103)	-0.289***	(0.062)	-0.255**	(0.099)
	UB*UR	0.040*	(0.020)	0.041*	(0.025)	0.019**	(0.008)	0.018***	(0.006)	0.017*	(0.010)
Italy	UB	-0.866***	(0.197)	-0.865**	(0.353)	-0.372**	(0.132)	-0.372***	(0.103)	-0.311**	(0.135)
	UB*UR	0.041	(0.024)	0.041*	(0.025)	0.019**	(0.008)	0.019**	(0.008)	0.016	(0.010)
Netherlands	UB	-0.941***	(0.197)	-0.941***	(0.246)	-0.320**	(0.103)	-0.317***	(0.094)	-0.263**	(0.128)
	UB*UR	0.056**	(0.018)	0.056**	(0.023)	0.022**	(0.009)	0.021**	(0.009)	0.018*	(0.010)
Portugal	UB	-0.857**	(0.267)	-0.856***	(0.261)	-0.346***	(0.104)	-0.346***	(0.078)	-0.295**	(0.126)
	UB*UR	0.046	(0.025)	0.045*	(0.025)	0.024**	(0.009)	0.024***	(0.007)	0.021*	(0.011)
Spain	UB	-0.700***	(0.188)	-0.700**	(0.301)	-0.319***	(0.088)	-0.319***	(0.092)	-0.274**	(0.130)
	UB*UR	0.032	(0.019)	0.034	(0.028)	0.023***	(0.006)	0.023**	(0.009)	0.021*	(0.011)
UK	UB	-1.195***	(0.232)	-1.210***	(0.219)	-0.439***	(0.118)	-0.439***	(0.098)	-0.372**	(0.145)
	UB*UR	0.080***	(0.020)	0.080***	(0.020)	0.033***	(0.010)	0.033***	(0.009)	0.029**	(0.011)

Remarks:
*,**,*** indicate significance at 10, 5 and 1 per cent respectively. Fixed country effects and common year effects included. Controls (not reported in the table): Growth rate of real gdp per capita, short term real interest rate, unemployment rate. All OLS estimations with Driscoll/Kraay std. errors robust to heteroscedasticity, cross-sectional correlation and autocorrelation. IV estimations with heteroscedasticity and autocorrelation consistent std. errors; instruments used: unit labour cost (level/growth rate), election dummy, participation rate, (fertility rate). Robust std. errors in parentheses.
[a] LSDVC-Estimator; Arellano-Bond as consistent estimator to initialise bias correction; bootstrapped std. errors.

Table 14: Panel unit root tests

	Saving intention	**GDP p.c.(growth rate)**	**Unemployment rate (UR)**
Levels			
Levin, Lin, Chu (2002) (LLC)	0.2390 (0.5944)	-6.5542*** (0.0000)	0.1866 (0.5740)
Im, Pesaran, Smith (2003) (IPS)	0.4548 (0.6754)	-5.2565*** (0.0000)	0.3128 (0.6228)
Fisher-type test (combined ADF)	1.0577 (0.1451)	4.3357*** (0.0000)	1.0339 (0.1506)
Hadri (2000)	20.8285*** (0.0000)	3.3664*** (0.0004)	15.9592*** (0.0000)
No. of countries with ind. unit root (p-value >0.10)	9	6	9
First differences			
Levin, Lin, Chu (2002) (LLC)	-9.4108*** (0.0000)	-12.8254*** (0.0000)	-7.5662*** (0.0000)
Im, Pesaran, Smith (2003) (IPS)	-8.1810*** (0.0000)	-11.3316*** (0.0000)	-5.3273*** (0.0000)
Fisher-type test (combined ADF)	9.5908*** (0.0000)	20.7258*** (0.0000)	7.2025*** (0.0000)
Hadri (2000)	0.8891 (0.1870)	-2.4788 (0.9934)	1.1094 (0.1336)
No. of countries with ind. unit root (p-value >0.10)	2	0	2

	Short term interest rate(IRS)	**First-year unemployment benefit(UB)**	**Interaction-effect (UR*UB)**
Levels			
Levin, Lin, Chu (2002) (LLC)	-4.2003*** (0.0000)	-2.8109*** (0.0025)	-1.8710** (0.0307)
Im, Pesaran, Smith (2003) (IPS)	-3.3818*** (0.0004)	-1.1393 (0.1273)	-0.0446 (0.4822)
Fisher-type test (combined ADF)	1.2321 (0.1090)	2.9898*** (0.0014)	0.5856 (0.2791)
Hadri (2000)	26.4438*** (0.0000)	25.2307*** (0.0000)	20.3760*** (0.0000)
No. of countries with ind. unit root (p-value >0.10)	11	10	9
First differences			
Levin, Lin, Chu (2002) (LLC)	-16.4813*** (0.0000)	-7.1092*** (0.0000)	-7.3499*** (0.0000)
Im, Pesaran, Smith (2003) (IPS)	-13.0463*** (0.0000)	-5.9129*** (0.0000)	-5.3331*** (0.0000)
Fisher-type test (combined ADF)	14.1327*** (0.0000)	12.4228*** (0.0000)	7.8523*** (0.0000)
Hadri (2000)	-0.1361 (0.5541)	0.2598 (0.3975)	1.0965 (0.1364)
No. of countries with ind. unit root (p-value >0.10)	0	0	2

Remarks:
The following test statistics are reported in the table:
i) LLC: adjusted t* (H0: Panels contain unit roots; Ha: Panels are stationary)
ii) IPS: W-t-bar (H0: All panels contain unit roots; Ha: some panels are stationary)
iii) Fisher: modified Chi-square (H0: All panels contain unit roots; Ha: At least one panel is stationary)
iv) Hadri: z-statistic (H0: All Panels are stationary; Ha: Some panels contain unit roots)
In the tests for the levels potential cross-sectional dependence is is taken into account by subtracting cross-sectional means ('demeaning'). p-values are given in parentheses. Schwarz-criterion was applied in LLC and IPS to determine the optimal lag length in the estimation; lag(1) in Hadri and Fisher. Augmented Dickey-Fuller unit root test for individual countries can be obtained from the author upon request.

Table 15: Panel cointegration tests (Pedroni 1999, 2004)

Panel t-test statisitc	-2.6649*** (0.0039)
Group t-statistic	-3.53189*** (0.0002)

Remarks:
Following Pedroni [2004] and Lee [2006], Panel t-statistic and Group t-statistic are the most powerful cointegration tests among those suggested by Pedroni [1999], given the sample size of N=11 and T=20.
Both tests are based on averaging ADF test statistics of the cross-sections. The tests were performed by Eviews6.
H0: no cointegration, estimation without assuming deterministic trend, automatic lag length selection by Schwarz-criterion.

Table 16: Pooled mean group estimation

Variables	ARDL(1,0,0,0,0,0)		ARDL(1,1,1,1,1,1)	
Long-run coefficients				
Unemployment benefits (UB)	-1.157**	-1.716***	-0.881**	-1.348***
	(0.506)	(0.451)	(0.368)	(0.331)
Unemployment rate (UR)	-4.828**	-7.881***	-3.296**	-6.791***
	(2.381)	(2.278)	(1.607)	(1.767)
UB*UR	0.113**	0.131***	0.0753*	0.112***
	(0.053)	(0.045)	(0.039)	(0.037)
Real GDP per capita	424.807***	370.196***	84.764**	221.369***
(growth rate)	(82.859)	(86.216)	(36.859)	(60.829)
Short term real interest rate	1.383**	1.331	2.322***	0.172
	(0.574)	(0.835)	(0.521)	(0.530)
(Average) Speed of adjustment ϕ	-0.224***	-0.261***	-0.259**	-0.363***
	(0.055)	(0.041)	(0.103)	(0.087)
Av. short-run coefficients				
ΔGDP growth			40.051**	-11.978
			(16.035)	(22.234)
ΔUR			-2.123	-2.472
			(7.612)	(2.552)
ΔInterest rate			-0.087	0.019
			(0.327)	(0.271)
ΔUB			-0.063	-0.868**
			(1.390)	(0.358)
ΔUB*UR			-0.025	0.027
			(0.127)	(0.041)
No. of observations	218	218	218	218
No. of countries	11	11	11	11
Fixed year effects	-	Yes	-	Yes
BIC	1239.372	1219.592	1149.718	1154.589

Remarks:
*,**,*** indicate significance at 10, 5 and 1 per cent respectively. The table gives the common long-run relationships and average short-run effects for the included variables. Specification (1) and (2) refer to an ARDL(1,0,0,0,0,0) model, specification (3) and (4) refer to an ARDL(1,1,1,1,1,1) model including one lag of each right-hand side variable. Variables in specifications (2) and (4) are demeaned, i.e. given as differences from their cross-sectional means to account for common time effects. Fixed country effects included.

A.3 A simple illustrative model

The simple two-period model in this section is meant to illustrate the basic idea, that survey respondents may indicate lower expected saving when the current unemployment rate rises. As argued above, this may be due to an 'expected income effect', i.e. expected saving decrease because the probability of unemployment rises and therefore the respondent might fear not to have enough financial means left to save after having paid for basic necessities. A crucial assumption for this result is that the individual has a certain expectations concerning the future unemployment rate. The expectation formation process can be stated as follows: the further in the future is the expected value of the unemployment rate, the smaller is the influence of current realisations of the unemployment rate on that value. In other words, the individual may adopt the current unemployment rate as the expected probability of unemployment in the near future. From the perspective of the individual, the unemployment rate in the remote future may not be as easily assessable. He may instead rely more on prior beliefs concerning the unemployment rate. Just to give an example, this prior belief may be represented by the long-term average unemployment rate. The following simple two-period model may illustrate this idea.

The set-up of the model is as follows. There is a representative individual who lives for two periods, has no assets at the start and (in expectation) is not allowed to leave any bequests (i.e. all assets have to be consumed in the last period). Moreover, it is assumed that the rate of time preference equals the interest rate and both are zero. Income is uncertain in both periods due to the possibility of unemployment. When employed, he receives a labour income y, in case of unemployment he gets a known fraction αy as income replacement (with $0 < \alpha < 1$). To capture the effect of prior beliefs and the formation of expectations about the unemployment rate on expected saving, it is simply assumed that the individual possesses some belief q_0 from the outset. Before the first period begins, he is asked to indicate his expected savings in the first period. The expected savings in the first period crucially depend

on (1) the employment status in the first period and (2) the probability of job loss (and therefore the income) in the second period. However, at the time of the survey the individual only has information about the current unemployment rate p_t, the labour income and the replacement rate. When asked about his expected savings, he therefore has to build expecations about the probability of unemployment in the first and the second period. To incorporate the idea that more remote expectations are influenced less by current realisations, I presume that the expectation formation at time $t = 0$ concerning the future unemployment rate can be represented by $E_t(p_{t+i}) = q_0 + \rho^{i-1}(p_t - q_0)$. For $i = 1$ (first period) and $i = 2$ (second period), the expected probability of unemployment given the prior beliefs and the current unemployment rate amounts to $E_0(p_1) = p_0$ and $E_0(p_2) = \rho \cdot p_0 + (1 - \rho) \cdot q_0$ with $0 < \rho \leq 1$. Applying a standard CARA period utility function, the expected savings of the individual in the first period based on the information set at the time of the survey are determined in the following two steps. Firstly, the expected optimal savings in the first period given a certain employment status (employed, unemployed) and the information at the time of the survey are calculated. Secondly, the overall expected savings of the respondent are calculated as the sum of those numbers, weighted by the expected probability of both possible states of employment in the first period. At the time of the survey ($t = 0$), the expected savings s_1 in the first period given the individual becomes unemployed in that period solve the following maximisation problem:

$$\begin{aligned} \max_{s_1} \quad & u_1 + E(u_2) = -1/a \cdot exp^{-a(\alpha y - s_1)} + \\ & + E_0(p_2) \cdot (-1/a \cdot exp^{-a(s_1 + \alpha y)}) + (1 - E_0(p_2)) \cdot (-1/a * exp^{-a(s_1 + y)}) \end{aligned} \tag{7}$$

In the case of employment in the first period the maximisation problem is:

$$\begin{aligned} \max_{s_2} \quad & u_1 + E(u_2) = -1/a \cdot exp^{-a(y - s_2)} + \\ & + E_0(p_2) \cdot (-1/a \cdot exp^{-a(s_2 + \alpha y)}) + (1 - E_0(p_2)) * (-1/a \cdot exp^{-a(s_2 + y)}) \end{aligned} \tag{8}$$

Finally, the expected savings of the respondent are calculated as

$$E(s) = E_0(p_1) \cdot s_1 + (1 - E_0(p_1)) \cdot s_2 \tag{9}$$

Intuitively, there are generally two channels by which the current unemployment rate impacts expected savings at the time of the survey. To start with, a higher unemployment is reflected in a higher expected unemployment rate in the second period. Concerning the first period, this leads to lower dissaving in the case of unemployment and higher savings if the individual is employed. Secondly, the current unemployment rate directly impacts the expected probability of unemployment in the first period and therefore the weighting of savings and dissavings in the expression for the expected savings (this effect may be labelled as the 'expected income effect'). Now, it can be shown that there are parameter values for those the first derivative ($\partial E(s)/\partial p_0$) becomes negative, i.e. expected savings decrease with the unemployment rate. Because the purpose of this illustrative example is just to show that saving intentions may be negatively related with the current unemployment rate under certain circumstances, table 17 gives some exemplary parameter values and the sign of $\partial E(s)/\partial p_0$. For a wide range of parameter combinations, a higher

Table 17: Simulations

Parameter values			
ρ	α	q_0	$\partial E(s)/\partial p_0$
0.2	0.5	0.05	< 0
0.2	0.7	0.05	< 0
0.2	0.9	0.05	< 0
0.2	0.5	0.15	< 0
0.2	0.7	0.15	< 0
0.2	0.9	0.15	< 0
0.1	0.5	0.05	< 0
0.2	0.5	0.05	< 0
0.3	0.5	0.05	< 0 (if $p_0 > 0.068$)
0.5	0.5	0.05	< 0 (if $p_0 > 0.149$)

Remarks:
In all simulations, a labour income of $y = 3000$ and rate of risk aversion $a = 0.003$ is assumed. If not stated otherwise, the sign for $\partial E(s)/\partial p_0$ holds for all values of p_0.

current unemployment rate is associated with lower expected savings. This holds true especially if the impact of the unemployment rate at the time of the survey only has a small impact on the expectations of unemployment in the remote future ('small' ρ). If ρ rises, $\partial E(s)/\partial p_0$ is negative only in the cases of a high current rate of unemployment. That is because if ρ is high, the current unemployment rate is more strongly incorporated in the expected unemployment rate in the second period, leading generally to a stronger increase in savings (and a decrease of dissaving, respectively) in the first period. Only if the expected probability of job loss in the first period is on a relatively high level, the expected saving at the time of the survey decreases with the current unemployment rate in this case.

References

Daron Acemoglu and Andrew Scott. Consumer confidence and rational expectations: Are agents' beliefs consistent with the theory. *Economic Journal*, 103:1–19, 1994.

Gayle Allard. Measuring the changing generosity of unemploymnet benefits: Beyond existing indicators. *IE Working Paper WP05-18*, 2005.

Dimitrios Asteriou. Foreign aid and economic growth: New evidence from a panel data approach for five South Asian countries. *Journal of Policy Modeling*, 31: 155–161, 2009.

Badi H. Baltagi. *Econometric Analysis of Panel Data*. John Wiley, 3rd edition, 2005.

Guiseppe Bertola, Andrea Ichino, and Frederick van der Ploeg. Crossing the River: A comparative perspective on Italian employment dynamics. *Economic Policy*, 10:359–420, 1995.

Edward F. III Blackburn and Mark W. Frank. Estimation of nonstationary heterogenous panels. *The Stata Journal*, 7:197–208, 2007.

Olivier J. Blanchard and Justin Wolfers. The Role of Shocks and Institutions in the Rise of European Unemployment: The Aggregate Evidence. *Economic Journal*, 110:C1–33, 2000.

G. S. F. Bruno. Estimation, inference and monte carlo analysis in dynamic panel data models with small number of individuals. Università Bocconi, unpublished, 2004.

Tim Callen and Christian Thimann. Empirical Determinants of Houshold Saving: Evidence from OECD Countries. *IMF Working Paper WP 97/181*, 1997.

Christopher D. Carroll. Buffer-stock saving and the life-cycle/permanent income hypothesis. *The Quarterly Journal of Economics*, 112:1–55, 1997.

Christopher D. Carroll and Andrew A. Samwick. How important is precautionary saving? *The Review of Economics and Statistics*, 80:410–419, 1998.

Andrew Clark and Fabian Postel-Vinay. Job security and job protection. *Oxford Economic Papers*, 61:207–239, 2009.

Rafael Di Tella and Robert MacCulloch. Unemployment benefits as a substitute for a conservative central banker. *Review of Economics and Statistics*, 86:911–922, 2004.

Mathias Dolls, Clemens Fuest, and Andreas Peichl. Wie wirken die automatischen Stabilisatoren in der Wirtschaftskrise? Deutschland im Vergleich mit der EU und den USA. *IZA Standpunkte Nr. 19*, September 2009.

Jeff Dominitz and Charles F. Manski. How should we measure consumer confidence? *The Journal of Economic Perspectives*, 20:51–66, 2004.

John C. Driscoll and Aart C. Kraay. Consistent covariance matrix estimation with spatially dependent panel data. *The Review of Economics and Statistics*, 80: 549–560, 1998.

David M. Drukker. Testing for serial correlation in linear panel-data models. *The Stata Journal*, 3:168–177, 2003.

Werner Eichhorst, Michael Feil, and Christoph Braun. What have we learned? Assessing labor market institutions and indicators. *IAB Discussion Paper 22/2008*, 2008.

Eric Engen and Jonathan Gruber. Unemployment insurance and precautionay savings. *Journal of Monetary Economics*, 47:545–579, 2001.

Richard B. Freeman. War of the models: Which labour market institutions for the 21st century? *Labour Economics*, 5:1–24, 1998.

William H. Greene. *Econometric Analysis*. Prentice Hall Internat., 4th international edition, 2000.

Luigi Guiso, Tullio Japelli, and Daniele Terlizzese. Earnings uncertainty and precautionary savings. *Journal of Monetary Economics*, 30:307–337, 1992.

Friedrich Heinemann, Michael Förg, Dieter Frey, Eva Jonas, Waldemar Rotfuß, Eva Traut-Mattausch, and Peter Westerheide. *Psychologie, Wachstum und Reformfähigkeit*. ZEW Wirtschaftsanalysen Band 88. Nomos, 2008.

Glenn R. Hubbard, Jonathan Skinner, and Stephen P. Zeldes. Precautionary Saving and Social Insurance. *The Journal of Political Economy*, 103:360–399, 1995.

R.A. Judson and A.L. Owen. Estimating dynamic panel data models: a guide for macroeconomists. *Economic Letters*, 65:9–15, 1999.

George Katona. *The Powerful Consumer*. McGraw-Hill, 1960.

Miles S. Kimball. Precautionary savings in the small and in the large. *Econometrica*, 58:53–73, 1990.

J.F. Kiviet. On bias, inconsistency and efficiency of various estimators in dynamic panel data models. *Journal of Econometrics*, 68:53–78, 1995.

Andy C. Kwan and John A. Kotsomitis. Can consumer attitudes forecast household spending in the United States? *Southern Economic Journal*, 71:136–144, 2004.

Gwanghoon Lee. The effectiveness of international knowledge spillover channels. *European Economic Review*, 50:2075–2088, 2006.

Hayne E. Leland. Saving and uncertainty: The precautionary demand for saving. *The Quarterly Journal of Economics*, 82:465–473, 1968.

Norman Loayza and Romain Ranciere. Financial Development, Financial Fragility, and Growth. *IMF Working Paper 05/170*, 2005.

Norman Loayza, Klaus Schmidt-Hebbel, and Luis Serven. What drives private saving across the world? *The Review of Economics and Statistics*, 82:165–181, 2000.

Stefan Lollivier and Laurence Rioux. Do UI benefit levels or benefit duration have an impact on perceived job security? Working Paper, August 2006.

Sydney C. Ludvigson. Consumer confidence and consumer spending. *Journal of Economic Perspectives*, 18:29–50, 2004.

Annamaria Lusardi. Precautionary saving and subjective earnings variance. *Economics Letters*, 57:319–326, 1997.

Jim Malley and Thomas Moutos. Unemployment and consumption. *Oxford Economic Papers*, 48:584–600, 1996.

Stephen Nickell and Richard Layard. Labor market institutions and economic performance. In Orley Ashenfelter and David Card, editors, *Handbook of Labor Economics*, volume 3, chapter 46, pages 3029–3084. North-Holland, 1999.

Stephen Nickell, Luca Nunziata, and Wolfgang Ochel. Unemployment in the OECD since the 1960s. What do we know? *The Economic Journal*, 115:1–27, 2005.

Stephen J. Nickell. Biases in dynamic models with fixed effects. *Econometrica*, 49: 1417–1426, 1981.

William Nickell. The CEP-OECD Institutions Data Set (1960-2004). *Center for Economic Performance Discussion Paper No 759*, 2006.

Wolfgang Ochel. Concepts and measurement of labour market institutions. *CESifo DICE Report 4/2005*, pages 40–55, 2005.

Wolfgang Ochel. Aussagekraft von internationalen Arbeitsmarktvergleichen (Benchmarking). In Volker Rieble, editor, *Reformdruck auf das Arbeitsrecht in Europa - Wie reagieren nationale Rechtsordnungen?*, pages 10–31. ZAAR Verlag, 2006.

Peter Pedroni. Critical values for cointegration tests in heterogeneous panels with multiple regressors. *Oxford Bulletin of Economics and Statistics*, 61:653–670, 1999.

Peter Pedroni. Panel cointegration: Asymptotic and finite sample properties of pooled time series tests with an application to the ppp hypothesis. *Econometric Theory*, 20:597–625, 2004.

Hashem M. Pesaran, Yongcheol Shin, and Ron P. Smith. Pooled Mean Group Estimation of Dynamic Heterogenous Panels. *Journal of the American Statistical Association*, 94:621–634, 1999.

Anna Rabinovich and Paul Webley. Filling the gap between planning and doing: Psychological factors involved in the successful implementation of saving intention. *Journal of Economic Psychology*, 28(4):444–461, 2007.

David Roodman. How to do xtabond2: An introduction to "difference" and "system" gmm in stata. Working Paper 103, Center for Global Development, 2008.

Michael W. M. Roos. Willingness to consume and ability to consume. *Journal of Economic Behavior and Organization*, 66:387–402, 2008.

Agnar Sandmo. The effect of uncertainty on savings decisions. *The Review of Economic Studies*, 37:353–360, 1970.

Mechthild Schrooten and Sabine Stephan. Does Macroeconomic Policy Affect Private Savings in Europe? Evidence From a Dynamic Panel Data Model. Discussion Paper 431, DIW Berlin, July 2004.

Nicolas S. Souleless. Expectations, heterogenous forecast errors, and consumption: Micro evidence from the Michigan Consumer Sentiment Surveys. *Journal of Money, Credit and Banking*, 36:39–72, 2004.

Marno Verbeek. *A guide to modern econometrics*. Wiley, 2004.

IAAEG Discussion Paper Series (since 2001)

No.	Author(s)	Title
03/2011	Vanessa Mertins Henrik Egbert Tanja Könen	The Effects of Individual Judgements about Selection Procedures: Results from a Power-to-Resist Game
02/2011	Gerald Eisenkopf Ruslan Gurtoviy Verena Utikal	Size matter – when it comes to lies
01/2011	Daniel Heuermann	Job Matching Efficiency in Skilled Regions - Evidence on the Microeconomic Foundations of Human Capital Externalities
04/2010	Kai Kühne	Politische Arbeitsrechsprechung?
03/2010	Anke Hammen	Fachliche Zusammensetzung von Mehrfachqualifikationen – Einflussfaktoren und Konsequenzen
02/2010	Peter Schneider	The effect of academic socializing strategies on collaboration: Empirical evidence from European economics departments
01/2010	Peter Schneider Dieter Sadowski	Governance configurations and academic outcomes: The example of Ph.D. education
04/2009	Pia Lünstroth	Stufenmodell oder Leistungspunkte? Die Vergabe besonderer Leistungsbezüge an deutschen Universitäten
03/2009	Daniel Heuermann	Human Capital Externalities in Western Germany
02/2009	Daniel Heuermann	Reinventing the Skilled Region: Human Capital Externalities and Industrial Change
01/2009	Daniel Heuermann	Career Networks and Job Matching - Evidence on the Microeconomic Foundations of Human Capital Externalities
07/2008	Vanessa Mertins	Procedural Satisfaction Matters - Procedural Fairness Does Not: An Experiment Studying the Effects of Procedural Judgments on Outcome Acceptance
06/2008	Vanessa Mertins	The Effects of Procedures on Social Interaction: A Literature Review
05/2008	Daniel Heuermann	Human Capital Externalities in Western Germany.
04/2008	Daniel Heuermann	Job Turnover, Risk Sharing and Regional Wages in Western Germany.
03/2008	Peter Schneider Dieter Sadowski	The impact of New Public Management (NPM) instruments on PhD education.
02/2008	Anke Hammen	Fachliche Zusammensetzung von Bildungsportfolios: Empirische Analyse eines Risk-Return Trade-Offs
01/2008	Kai Kühne Dieter Sadowski	Empirische Mitbestimmungsforschung und Öffentlichkeit
03/2007	Christoph Sax	Demographie und Lohnunterschiede
02/2007	Andreas Tiltag	Der Traum vom Mindestlohn: ein Ländervergleich.
01/2007	Daniel Heuermann	Human Capital Externalities in Western Germany.
01/2006	Susanne Warning	A Model of Strategic University Positioning
01/2005	Mihai Paunescu	Conditions for an efficient innovation process: The Complementarity between new HRM practices and Suggestion Schemes.
01/2004	Mihai Paunescu	Ineffizienzen öffentlicher und privater Schulen im internationalen Vergleich. Eine Data-Envelopment-Analyse der PISA-2000-Daten.
02/2003	Dieter Sadowski Oliver Ludewig	Organisational Capital: The Power of an Economic Metaphor - Organisational Capital in German Establishments.
01/2003	Kerstin Pull	Der Einfluss personalpolitischer Flexibilität auf die Standortwahl Multinationaler Unternehmen: eine empirische Analyse..
06/2002	Dieter Sadowski Oliver Ludewig Florian Turk	Europeanization of Collective Bargaining. Centralization Costs and Optimal Wage Bargaining Area.
05/2002	Martin Schneider	Performance Management by Culture in the NLRB's Division of Judges and the German Labor Courts of Appeal.
04/2002	Kerstin Pull	Labour Market Regulation and Foreign Direct Investment: US Multinationals in Germany and the UK.
03/2002	Martin Schneider	Leistungssteuerung und Karriereanreize für "professionals": Ein Vergleich deutscher und amerikanischer Berufsrichter.

02/2002	Martin Schneider	Judicial Lawmaking in a Civil Law System: Evidence from German Labor Courts of Appeal.
01/2002	Florian Turk	Export und Beschäftigungsdynamik: eine mikroökonomische und -ökonometrische Analyse mit dem Betriebspanel Rheinland-Pfalz.
02/2001	Florian Turk	Ein wertschöpfungsbasierter Ansatz der einzelwirtschaftlichen Verteilungstheorie: Bilanzpolitik und Arbeitsrecht als institutionalisierte Verhandlungsrestriktionen.
01/2001	Dieter Sadowski Oliver Ludewig Florian Turk	Employment-related Collective Bargaining in Germany.