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John P. Haisken-DeNew and Matthias Vorell

Killing them with Kindness: Negative Distributional Externalities of Increasing UI Benefits

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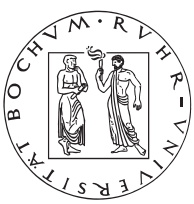

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Technische Universität Dortmund, Department of Economic and Social Sciences
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Universität Duisburg-Essen, Department of Economics
Universitätsstraße 12, 45117 Essen, Germany

Rheinisch-Westfälisches Institut für Wirtschaftsforschung (RWI)
Hohenzollernstr. 1/3, 45128 Essen, Germany

Editors:

Prof. Dr. Thomas K. Bauer
RUB, Department of Economics
Empirical Economics
Phone: +49 (0) 234/3 22 83 41, e-mail: thomas.bauer@rub.de

Prof. Dr. Wolfgang Leininger
Technische Universität Dortmund, Department of Economic and Social Sciences
Economics – Microeconomics
Phone: +49 (0) 231 /7 55-32 97, email: W.Leininger@wiso.uni-dortmund.de

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Prof. Dr. Christoph M. Schmidt
RWI
Phone: +49 (0) 201/81 49-227, e-mail: christoph.schmidt@rwi-essen.de

Editorial Office:

Joachim Schmidt
RWI, Phone: +49 (0) 201/81 49-292, e-mail: joachim.schmidt@rwi-essen.de

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John P. Haisken-DeNew and Matthias Vorell*

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Abstract

Of the many labour market Hartz IV reforms that have been implemented in Germany since 2005, the role of short-term unemployment insurance has not received much attention. In this paper we examine distributional effects of labour earnings and unemployment benefits using simulated increases in unemployment insurance replacement rates or equivalently, increases in the net present value of benefit duration. Starting around an 18%-point increase in the replacement rate, there are significant negative labour supply effects, drawing those employed into unemployment shifting the mass of the earnings distribution to the left. At around a 25%-point increase in the replacement rate, the mass of the distribution shifts right again, as those receiving unemployment benefits simply enjoy an increased transfer. Thus, due to the substantial negative labour supply effects, German economic policy should avoid potentially increasing the UI benefit replacement rate (or equivalently, increasing the benefit duration) in the near future as a response to the worldwide economic crisis.

JEL Classification: J65, D31, J22

Keywords: Unemployment, income distribution, labour supply

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* John P. Haisken-DeNew, University of Bochum, RWI, McMaster University; Matthias Vorell, RWI. – We gratefully acknowledge financial support from the German Science Foundation (DFG) through the SFB 475-B9 based at the Technical University of Dortmund. We thank Lars Vilhuber, Sonja Kassenboehmer and other conference participants at the Canadian Economics Association Meetings in Toronto 2009 for helpful comments on an earlier draft of this paper. – All correspondence to John P. Haisken-DeNew, Ruhr University of Bochum, Universitätsstr. 150, 44801 Bochum, Germany, e-mail: john.haisken-denew@rub.de.

1 Introduction and Background

Starting in January 2008, for some age groups in Germany, the maximum number of months of unemployment insurance (UI) benefit receipt was increased from 18 to 24 months. This was seen as a way of tiding over some older persons already under pressure of unemployment and bleak reemployment prospects. As this effectively increased the net present value of the future stream of benefit payments by a considerable amount, there may indeed be some induced behavioural changes by those currently employed. By increasing the amount or maximal length of benefit receipt, is one effectively luring already employed persons into unemployment? What are the effects on the income distribution, given that with increased unemployment benefits, some persons rationally choose to enter into unemployment and collect benefits as opposed to working and earning own income.

The impact of unemployment insurance systems on the labour market is surely one of the most thoroughly examined topics in labour economics. An excellent overview of the earlier studies can be found in Hamermesh (1977) and Welch (1977). With the advance of econometrics and distributional analysis the emphasis in the literature shifted towards the analysis of policy changes on distributional outcomes and heterogeneity of treatment effects (DiNardo, Fortin, and Lemieux, 1996, Heckman and Smith, 1997, Heckman, 2000, Carneiro, Hansen, and Heckman, 2001). The general need for rigorous program evaluation and the use of counterfactuals in policy evaluation is described in Schmidt (2001) and Kluve (2004).

Special attention has been given to the link between the duration and level of unemployment insurance payments and the probability and duration of unemployment. While standard theories suggested a pure negative effect on employment (e.g. Hopenhayn and Nicolini, 1997 and Boone, Fredriksson, Holmlund, and van Ours, 2007), a strand of models has emerged which allow unemployment systems to have positive outcomes in the long run (Ben-Horim and Zuckerman, 1987, Acemoglu and Shimer, 1999, Acemoglu and Shimer, 2000).

Empirical research yields a mixed picture, with mostly negative outcomes for the US and Canada (Baker and Rea Jr, 1998, Ham and Rea Jr, 1987, Anderson and Meyer, 1997 and Meyer, 1990). In Europe, the main part of the existing literature finds negative effects of increases in level or length of benefit entitlement on employment probability and the transition from unemployment into employment (Carling, Edin, Harkman, and Holmlund, 1996,

Abbring, van den Berg, and Ours, 2005, Alba-Ramirez, 1999 and Fredriksson and Holmlund, 2006).

A large literature for Germany exists, considering the general effects of the unemployment insurance system (Wilke, 2005, Lüdemann, Wilke, and Zhang, 2006, Müller and Steiner, 2008, Heer, 2002 and Biewen and Wilke, 2005). Hunt (1995) specifically looks at changes in unemployment insurance duration and finds negative effects on the re-employment rate, which are pronounced for elder males.

With the implementation of the Hartz IV reform, the literature extended further. For a detailed overview of the reforms and changes associated with Hartz IV see Jacobi and Kluve (2007). Special consideration has been given to the link between unemployment benefit level and duration, effect heterogeneity and transition dynamics (Huber, Lechner, Walter, and Wunsch, 2009, Lee and Wilke, 2005, Schmitz and Steiner, 2007).

The institutional setting of short term unemployment in Germany obviously plays an important role. In order to receive payments from the unemployment insurance system, the responsible local unemployment agency has to be notified in advance, as soon as a person receives notice of a prospective job loss. The usual time span in Germany for the advance notice is three months. Everyone is eligible for unemployment insurance who worked at least 360 days in the last two years at a social security covered job, i.e. a job which is part of the social security system[1]. To become officially registered one must be: *(i)* not employed, *(ii)* willing to participate in the labour market and *(iii)* available to placement efforts undertaken by the responsible unemployment office to. Participants of active labour market programs are not officially registered as unemployed. Once officially recognized as being unemployed, an individual receives payments from the federal unemployment office (*Bundesagentur für Arbeit*).

Unemployment insurance payments are calculated by taking the previous gross wage, capped by the social security contribution ceiling (*Beitragsbemessungsgrenze*), subtracting income taxes. Further, the German Reunification Solidarity Transfer (*Solidaritätszuschlag*)[2] and a social security insurance

[1]Some exceptions from this general rule exist, like eligibility of males who were drafted into the military/community service or woman who took some time off work to give birth (*Elternzeit*).

[2]A certain percentage of the gross wage is taken away to pay for the costs of German reunification. It is defined as roughly 5% of the income tax.

lump sum (21% of the gross wage) are subtracted and this final net previous wage is then multiplied by 60% or 67% respectively, depending on the presence of children in the household. Payments cease after a certain maximum receipt period, which depends on the length of time one paid contributions into the insurance system. The minimum receipt period is at least 6 months and the longest 24 months. These time spans have been subject to large changes in the past. After exhausting the maximum receipt of UI, unemployed persons are entitled to receive means-tested unemployment assistance (commonly known as Hartz IV) for an *a priori* indefinite time span. See also Kassenboehmer and Haisken-DeNew (2009) for a discussion of social assistance.

Contributions to the unemployment insurance system consist of 3% of the gross wage. This sum is split and half is payed by the employer, the other half by the employee. An upper limit of the social security contribution ceiling which becomes adjusted every year, is imposed to confine payments from and to the insurance system.

This paper offers new insights into the potential negative incentive effects of increasing (short-term) unemployment insurance benefits in Germany. Recently, especially for older unemployed workers, the maximal length of UI receipt was extended from 18 to 24 months, effectively increasing the net present value of the stream of payments by more than 30% for some age groups. Using a static model based on data from the Socio-Economic Panel (SOEP), we simulate increases in UI benefits in this magnitude range and show that sizable portions of the working population close to, but over the 50% working probability threshold are lured away from gainful employment into taking unemployment benefits, thereby reducing their "earnings" and impacting negatively on the earnings distribution. We simulate increases of 25 to 40% of the current benefit level and find that an increase of 30-35% of UI benefits can induce a 5-20%-point increase in the head count ratio below a pre-increase median "earnings" level.

2 Data and Empirical Strategy

The German Socio-Economic Panel Study (SOEP) is a representative longitudinal study of private households in Germany. Starting in 1984, the same private households were followed each year. In 1990, after reunification, the panel was extended to the former German Democratic Republic (GDR). Apart from the samples for east and west Germany, the SOEP consists of

five other subsamples, such as the Immigrant Sample which was integrated in 1994 (see Haisken-DeNew and Frick, 2005 for more technical information on the SOEP). The data include information on objective and subjective aspects.[3]

In this study, men aged 18 to 65 who reside in Germany are included in the analysis, covering the years 2002 to 2007 (2002-2004 before the Hartz Reforms and 2005-2007 after the Hartz Reforms had been implemented). The total sample consists of 45,083 valid person-year observations. We augment the basic micro dataset with additional institutional generated variables. For each person, a counterfactual unemployment benefit is calculated, based on the person's current net earnings (net of taxes, social security contributions and health insurance payments). We take into account the social security contribution ceiling (*Beitragsbemessungsgrenze*), which has changed several times in recent years, when calculating potential benefits. In calculating the net labour income, we also implement the year-specific administrative income tax rates valid for the years in question.

Table 2 outlines the simulation strategy. Table 3 displays the regression results corresponding to the steps in Table 2. We estimate a simple earnings function (Y_{it} = net labour income) for employed males by random effects panel,

$$Y_{it} = \alpha + \beta X_{it} + \epsilon_i + u_{it} \tag{1}$$

and a function for the UI benefit,

$$UI_{it} = a + bX_{it} + e_i + v_{it} \tag{2}$$

in which our controls X_{it} include indicators for year dummies, years of education, age, east/west, and immigrant status. We then predict for males not working the net labour earnings and the potential UI benefit. We estimate a pooled binary probit model for the time period 2002-2007 for the variable working (W_{it}),

$$W_{it} = \theta + \kappa Z_{it} + \gamma \hat{Y}_{it} + \delta \hat{UI}_{it} + \varepsilon_{it} \tag{3}$$

[3]The dataset was extracted using PanelWhiz. See Haisken-DeNew (2007) and Haisken-DeNew and Hahn (2006). For more information on the SOEP, please see http://www.diw.de/soep.

in which our controls Z_{it} include indicators for years of education, age, east/west, net labour earnings and potential UI benefits, such that the probability that an individual becomes unemployed is given by a conditional expectation function:

$$P = (y = k|Z_{it}, \hat{Y}_{it}, \hat{UI}_{it}) = p_{ki} \tag{4}$$

where $k = 1$ if individual i becomes unemployed and $k = 0$ otherwise, i.e. stays employed and Z is a vector of observable individual characteristics just mentioned. A person is considered to be employed if the probability of him being employed is greater than or equal to 50%.

Critical for the model is that the coefficient γ is positive significant and that δ is negative significant. After estimating this probability for each person observed in our data, we can simulate new counterfactual employment probabilities by adjusting the unemployment benefit to some arbitrarily higher level and recalculate the employment probability. Should the person no longer have an employment probability greater than 50%, he is deemed to be unemployed and receives the counterfactual UI benefit. If his new predicted probability of employment is above 50%, he receives his wage. Thus, own wages and (short-term) unemployment insurance are combined into a total labour "earnings" distribution (own income plus unemployment benefits). Various scenarios are tested, such that the counterfactual unemployment benefit is increased up to 40% of the original levels.

An increase in the unemployment benefit of this magnitude (25-40%) might sound unreasonably high. However, the present discounted value of a maximal benefit receipt has effectively been increased more than 30% for the older age categories starting Jan 1, 2008, just simply due to the fact that *number of months* of UI receipt has been increased from 18 to 24 months. Using the formula of net present value[4], assuming an annual interest rate of 5% and increasing the number of months from 18 to 24 months as mandated for 58 year olds[5], this increase of more than 30% holds.

[4] $NPV = \frac{A}{i}[1 - \frac{1}{(1+i)^n}]$, where A is the benefit payment, i is the effective monthly interest rate, and n the maximal number of months of benefit receipt.

[5] §127 paragraph 2, SGB III

3 Empirical Results

Table 3 displays the estimated parameters of the earnings, UI benefit and probability models respectively. All standard control variables have the expected signs and are significant. Examining column (3), we find that γ is significant and positive, whereas δ correspondingly is negative and significant. Thus a higher expected wage increases the probability of employment and a higher expected unemployment insurance benefit controlling for the wage, elicits a reduced probability of employment. Specifically, a €1000 increase in net labour earnings increases the probability of working by 21.6%-points, whereas the same increase in UI benefits reduces the probability of working by 30.2%. The UI benefit variable is interacted with a dummy variable corresponding to one for the time period after implementation of the Hartz IV reforms (2006 and 2007) to identify to what extent there had been any change in behaviour after the reforms. However, this effect is insignificant and therefore, we can conclude that there has not been any observed behavioural change affecting the probability of working due to the level of UI benefits since the implementation of the Hartz IV reforms.

We take the analysis to the next step and implement the simulations. We first observe the baseline "earnings" distribution without any changes to the UI benefit. Then we simulate increases in the UI benefit of 25%, 30% 35% and 40%. Additional benefits lower than a 25% increase do not indicate any induced unemployment effects and are therefore not reported here.

Figure 1 shows the baseline earnings distribution (thinnest line) and the corresponding earnings distributions for simulated increases of UI benefits from 25% to 40% (thickest line). We separate the effects before and after the Hartz IV reforms. As one sees in the figure, there is no behavioural difference discernable between before and after.

To expand on the graphical representation, we include an FGT(0) representation of (a) being under a "poverty" line of 60% of the median baseline income as observed in 2002 and (b) being under the median baseline income of 2002, as shown in Table 1. A positive increase less than 25% produces negligible changes in the head count ratio (HCR) for both measures. The table provides a 95% confidence interval with the explicit lower and upper bounds reported. In the far left tail of the distribution, there appear to be no significant changes: the upper bound of the baseline (0.1142) overlaps with the lower bound of the 40% simulation (0.1091). This is mirrored in the graphical representation in Figure 1. However, when simply examining movements to

Table 1: Increased UI and Leftward Movements of "Earnings" Distribution

UI Increase	HCR<60%·Median	Lower Bound	Upper Bound
Baseline	0.0904	0.0666	0.1142
25%	0.0951	0.0723	0.1180
30%	0.1049	0.0841	0.1258
35%	0.1278	0.1122	0.1434
40%	0.1253	0.1091	0.1416
UI Increase	HCR<Median	Lower Bound	Upper Bound
Baseline	0.4585	0.4481	0.4689
25%	0.4667	0.4560	0.4774
30%	0.5057	0.4532	0.5582
35%	0.6463	0.5825	0.7101
40%	0.7466	0.7371	0.7560

Note: Point estimates with 95% confidence interval.
HCR is the "head count ratio". Median is from 2002.

the left of the baseline median, we find very large effects. Simulations with increases between 30 and 35% already create significant movements below the baseline median with the HCR increasing by some 5 to 20%-points (from 0.4585 to as much as 0.6463).

4 Conclusions

This paper offers new insights into the potential negative incentive effects of increasing (short-term) unemployment insurance benefits in Germany. Recently, especially for older unemployed workers, the maximal length of UI receipt was extended from 18 to 24 months, effectively increasing the net present value of the stream of payments by more than 30%. Using a static model based on data from the Socio-Economic Panel (SOEP), we simulate increases in UI benefits in this magnitude range and show that sizable portions of the working population close to, but over the 50% working probability threshold may be lured away from gainful employment into taking unemployment benefits, thereby reducing their "earnings" and impacting negatively on the earnings distribution.

Thus policies potentially intended to "help" unemployed persons have unwanted negative externalities of inducing *additional* unemployment. We quantify these effects with our parsimonious three equation model, taking into account not only labour supply behaviour but also the institutional income tax structure and find substantial movement especially in the middle of the "earnings" distribution. An increase of 30-35% of UI benefits can induce a 5-20%-point increase in the head count ratio below a pre-increase median "earnings" level. Thus policy makers should be wary of increasing either the benefit level for a given receipt time span or increasing simply the maximal benefit duration, as both policies effectively increase the net present value of the stream of benefits. Our simple model shows that employed persons do indeed respond to the weakened incentives and are lured into unemployment receipt. Further, the Hartz IV reforms appear not to have influenced any behavioural changes, as the simulation results are almost identical before and after the Hartz IV reforms were introduced in January 2005.

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5 Appendix

Table 2: Simulating UI Increases and Impact on Earnings Distribution

1. We construct net labour earnings based on gross earnings information, removing taxes, and various social security contributions for all those employed (based on administrative rules). See Table 3, column (1) for estimation results.

2. We calculate counterfactual unemployment insurance entitlements for each employed person, up to the social security contribution ceiling (*Beitragsbemessungsgrenze*) of 67% for persons with children and 60% for those without children. See Table 3, column (2) for estimation results.

3. For unemployed males, we calculate a potential wage and a corresponding UI entitlement.

4. Using a labour supply model, we find significant positive effects for own potential wage and significant negative effects for the level of entitlement. See Table 3, column (3) for estimation results.

5. We simulate increases in the replacement rate and calculate the impact on the probability of employment, define a counterfactual employment level and thereby create a counterfactual "earnings" (=labour earnings+unemployment insurance) distribution.

6. Increasing UI benefits shift the "earnings" distribution to the left. We calculate for each level of additional UI benefit, by how much the distribution (head count ratio) has shifted left of the (a) original 2002 baseline median and (b) original "poverty line" (60% of the 2002 baseline median).

Table 3: Estimated Parameters for Simulation Model

	(1) Random Effects Panel Net Income	(2) Random Effects Panel UI Benefits	(3) Binary Probit Working
Year Dummy 2003	84.981	298.833***	–
	(84.834)	(31.311)	
Year Dummy 2004	1322.226***	1054.065***	–
	(87.265)	(32.271)	
Year Dummy 2005	584.089***	595.498***	–
	(90.584)	(33.574)	
Year Dummy 2006	662.518***	584.586***	–
	(93.090)	(34.633)	
Year Dummy 2007	918.598***	777.690***	–
	(96.665)	(36.094)	
Years Education	1446.267***	631.997***	-0.010
	(30.418)	(11.925)	(0.019)
Age	304.068***	133.894***	-0.021***
	(7.589)	(3.010)	(0.004)
East Germany	-5527.469***	-2695.283***	-0.117
	(213.132)	(83.544)	(0.072)
Immigrant	-1214.318***	-145.790	–
	(305.875)	(121.545)	
Est. Net Income (1)	–	–	0.216***
			(0.022)
Est. UI Benefit (2)	–	–	-0.302***
			(0.041)
Est. UI Benefit 2006+	–	–	-0.000
			(0.002)
Constant	-9485.806***	-2012.880***	1.350***
	(442.627)	(174.251)	(0.168)
N	39358	39503	45083

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Figure 1: Simulated UI: Before and After the Hartz IV Reforms