Transitions from Welfare to Employment: Does the Ratio between Labor Income and Social Assistance Matter?

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Abstract

It is often argued that the high level of welfare claims in Germany creates little incentive for workers with low productivity to seek for a job. We examine the influence of the ratio between estimated potential labor income and the welfare payment level on the probability of leaving social welfare. We estimate a discrete time hazard rate model with unobserved heterogeneity using representative micro data from the German Socio-Economic Panel Study (SOEP). Our results show that the ratio has a positive effect on the probability of leaving social welfare. This effect is especially relevant for households with a potential labor income higher than their welfare payment level.

1. Introduction

In 2002, about 2.8 million people in Germany received social assistance.[1] The number of recipients and the amount of income support expenditures have been rising almost continuously in the past. Why does Germany have so many welfare recipients? In the economic literature as well as in the public debate on the German welfare system, the incentive argument plays an important role. It asserts that if the difference between the amount one receives from transfers and the potential income from a regular job is too small, then it is not attractive for an individual to take the job. In this paper, we analyze this hy-

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[1] This number of welfare recipients refers to permanent transfers, the so-called *Hilfe zum Lebensunterhalt.*

pothesis by estimating the impact of the ratio between potential labor income and the amount of transfer payments on the transition probability from welfare to employment in Germany.

Previous research indicates no influence of income variables on the duration on welfare in Germany. A study by Riphahn (1999) based on the German Socio-Economic Panel Study (SOEP) shows no significant influence of a predicted real net income variable for individuals employed full-time on the exit probability out of income support. Wilde (2003) uses the low-income panel to examine how the difference between social benefits and the average income affects the probability of leaving social welfare for unskilled employees, and finds no significant effects.

For our analysis, we use data from the SOEP. The data includes monthly information about the duration of social welfare of households between 1991 and 1999. We estimate a discrete-time proportional hazard rate model with competing risks and risk-specific unobserved heterogeneity.

Controlling for several typical covariates, the ratio between potential labor income and the welfare level shows the expected positive effect on the probability of leaving social welfare for work. This effect is especially relevant for households with a potential labor income higher than their social welfare level. Our results are contrary to previous studies described above. However, although the incentive hypothesis cannot be rejected, this study does not unambiguously answer whether the higher transition probability is a consequence of higher incentives or of a higher job offer arrival rate for better-educated persons. The positive effect of the ratio could be an indication of either.

2. Social Assistance in Germany

The German social welfare system (*Sozialhilfe*) is a means-tested transfer program. To qualify for welfare, household income may not exceed a certain minimum level. The amount of social assistance is related to a basic minimum income concept depending on household size, household composition, and some adjustments to specific needs, e.g., for disabled persons. Except for a small allowance, additional income is deducted from social assistance.[2] In principle, there is no time limit for welfare receipt. As a consequence, welfare payments may be regarded as a permanent alternative to labor income.

Following the static labor supply theory, participation in welfare is more likely the higher the amount of benefits (e.g. Moffitt 2002). A stylised depic-

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[2] For a detailed description of the social assistance in Germany see e.g. Schneider / Uhlendorff (2004).

tion of a utility-maximizing individual subject to a non-convex budget set is given in Figure 1. Only when the number of hours worked exceeds Q does disposable income exceed the social assistance level V and increase with net market wage rate w. Line B depicts disposable net income depending on the number of hours worked. If no social assistance existed, it would be optimal to work H hours per week. When a welfare program exists, not working may generate a higher utility level than working. I_0 symbolizes an indifference curve that connects all combinations of disposable income and working hours that are equivalent to not working at all. I_1, in comparison, stands for an indifference curve related to working H hours and achieving a disposable income of wH. In the case depicted, a utility-maximizing person would only work H hours per week if she could achieve a disposable income of at least Y^*, which can also be expressed in terms of an implicit minimum wage rate.
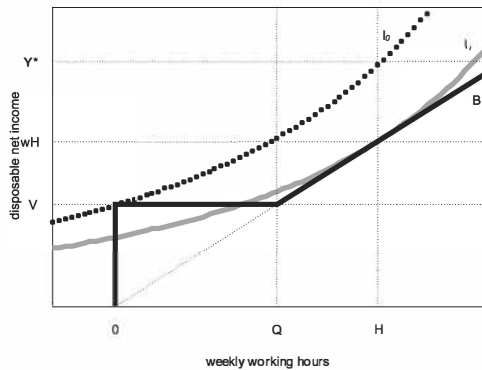

Figure 1: The Impact of Social Assistance on Work Incentives
for a Stylised Budget Set

In a dynamic job-search model, an individual does not stand to receive a particular wage but rather a particular distribution of wages (e.g. Devine / Kiefer 1991). To leave a welfare program for employment requires an acceptable job offer. Wage offers are only accepted if they exceed the reservation wage. This reservation wage depends positively on the amount of social benefits. Given a certain frequency of wage offers and a certain level of welfare payments, one is more likely to observe exits from social assistance the higher an individual's market (or expected) wage is. We assume that the effect of the difference between the two income sources depends on the relative level of the social benefits. Therefore, households with a lower ratio between potential labor income and the amount of social welfare should have a lower hazard rate from welfare to employment.[3]

Moreover, it should be taken into account that the relationship between reservation wages and actual wages is not a deterministic one. In practice, one may even observe actual wages falling below the replacement wage, i.e., below the level of social assistance. In terms of our model, this means that individuals attribute an unmeasured high non-monetary value to work. Working for less than the replacement wage could, for example, be explained as an attempt to avoid a stigma effect. Thus, unmeasured utility is another reason for the probabilistic nature of the model. If employment is viewed as a value in itself, it is reasonable to expect a non-linear relationship between the ratio of the two income sources and the hazard rate from welfare to employment. We will control for potential nonlinearities by considering three different levels of the ratio between the potential market wage and the replacement wage: ratios lower than and equal to 1 (potential market wage below replacement wage), ratios between 1 and 1.5 (potential market wage around replacement wage), and ratios above 1.5 (potential market wage clearly above replacement wage).

An alternative explanation for a lower exit probability of households with a lower ratio could be a lower arrival rate of job offers for low-skilled workers. This could be explained by a lack of job offers for low-skilled individuals. However, different low-skilled workers may have different reservation wage levels according to their household-related welfare claims. Controlling for skill level may therefore allow for a discrimination between demand effects and incentive effects.

3. Data, Variables and Methods

We use SOEP waves 1992 to 2000, which provide monthly information about social welfare receipt between 1991 to 1999 (for details on the SOEP see Haisken-DeNew / Frick 2003). Excluding households in which the household head and, if applicable, partner are aged 61 years or older, we observe 579 uncensored or right-censored social welfare spells between January 1991 and December 1999 distributed over 455 households. These spell data are combined with several time-variant and time-invariant household and individual characteristics.[4]

In the data, there are 386 uncensored and 193 right-censored observations. We are interested in the transition from social welfare to a situation with labor

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[3] We assume the income ratio to be exogenous. However, one could argue that demographic behavior with respect to fertility and marriage or schooling are affected by the welfare system and therefore the income ratio could be endogenous. For example, Keane and Wolpin (2002) take into account the impact of welfare benefits on the economic and demographic behavior of women in the U.S.

[4] For detailed descriptive statistics see Schneider / Uhlendorff (2004).

income. Therefore, we differentiate between transitions to employment (199 cases) and alternative transitions (187 cases). A transition to employment is defined as a situation with at least one adult household member (head of the household or partner) working full-time, both working part-time, or one person working at least part-time in the case of single households subsequent to benefit receipt. In the following, we describe the procedures used to estimate and calculate the two income sources.

3.1 Potential Net Income and Social Assistance

Our first step is to estimate a gross market wage equation with a pooled sample using the SOEP waves 1991 – 1999. We apply a sample selection model consisting of a log-linear wage equation and an equation describing the binary choice to work or not to work, also referred to as the type II Tobit model (e.g. Wooldrige 2002).[5] With this approach we control for potential endogeneity of the participation decision. Based on these estimation results, we calculate a potential monthly full-time gross wage for each head of household and his / her partner. We calculate the potential net income, assuming that in the case of a partner household, the person with the higher potential income would be working, and we account for income taxes, social security contributions, and child and housing allowance.

We observe the receipt of social assistance as a binary variable but not the corresponding amount of social assistance for each month. Therefore we calculate the maximum amount of social assistance. This is the income (including other transfers) that a household staying on welfare would receive permanently.

The empirical distribution of the ratio between the two income sources in the first month of each spell is plotted in Figure 2. The median is 1.26, i.e., for about half of the sample, expected income does not exceed their welfare benefits by more than 25%.

3.2 Model Specification

The process of leaving welfare in favor of labor income can appropriately be modeled by a transition rate approach. According to the type of data used here, a discrete hazard rate model has to be applied (see for example Han and Hausman 1990). The duration of welfare receipt is generated by a continuous time process, but observed in months. Two potential destination states are

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[5] We estimate separate models for East and West Germany and for men and women. The results are reported in Schneider / Uhlendorff (2004).
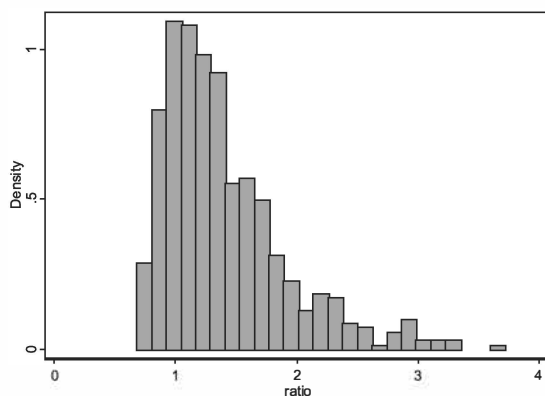
Figure 2: Ratio between Potential Net Income and the Amount of Social Assistance,
First Month of Each Welfare Spell (n = 579)

considered reflecting transitions to employment and alternative transitions such as those into other transfer programs. We assume proportional transition rates with covariates causing proportional shifts of a so-called baseline transition rate and interval constant covariates.

Following from this, the probability f of a transition to state r at a given interval j is given by the difference between two survivor functions[6] multiplied by the share of the risk-specific transition rate at interval j related to the hazard rate at interval j.[7]

$$(1) \qquad f_r(j) = \frac{\exp(x_{rj}\beta_r + \gamma_{rj} + \eta_r)}{\sum\limits_{q=1}^{2} \exp(x_{qj}\beta_q + \gamma_{qj} + \eta_q)}[S(j-1) - S(j)] \ .$$

The γ parameters capture the duration dependence of the baseline transition function. They may be interpreted as an interval-specific mean of the baseline transition rate, which is equivalent to a an interval-specific constant baseline transition rate. We assume the risk-specific unobserved heterogeneity components η_1 and η_2 following a bivariate normal distribution. The likelihood contribution of a spell corresponds to

$$(2) \quad L(\beta, \gamma, \eta_1, \eta_2) = \frac{\exp(x_{1j}\beta_1 + \gamma_{1j} + \eta_1)^{c_1} \exp(x_{2j}\beta_2 + \gamma_{2j} + \eta_2)^{c_2}}{\sum\limits_{q=1}^{2} \exp(x_{qj}\beta_q + \gamma_{qj} + \eta_q)}[cS(j-1) - (2c-1)S(j)]^{\delta}$$

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[6] The survivor function $S(j)$ describes the probability that a spell lasts at least j intervals.

[7] For a detailed discussion of the econometric model see Schneider / Uhlendorff (2004).

whereby $c_1 = 1$ and $c_2 = 1$ indicate a transition to risk 1 and risk 2 in interval j, respectively, and c corresponds to the maximum of c_1 and c_2. In the following, we will refer to this as a random effects piecewise exponential model.

4. Empirical Results

We estimate the hazard rate model for competing risks with and without unobserved heterogeneity. The coefficients of the model can be interpreted with respect to the underlying continuous time proportional hazard rate. The results are reported in Table 1. The inclusion of unobserved heterogeneity does not significantly improve the model fit.[9]

We created three variables representing the effect of the ratio between estimated potential labor income and welfare payment level: the first for ratios lower than and equal to 1, the second for ratios from 1 to 1.5, and the third for ratios above 1.5.[10] In models both with and without unobserved heterogeneity, the coefficients of the latter two variables are significantly positive, while the coefficient of the first is positive but not significantly different from zero. An increase in the ratio seems to be more relevant if the potential labor income exceeds the social assistance level.

The coefficient of the income ratio for a ratio between 1 and 1.5 indicates that an 0.1 higher ratio goes along with a 10% higher probability of an exit to employment, while a 0.1 higher ratio for ratios above 1.5 leads to 7% higher probability of a transition to employment. Assuming households with the same welfare level, a difference in the income ratio of 0.1 stands for a difference in estimated labor income by 10% of the social welfare level. For alternative transitions, these income variables have no significant influence. Our results confirm the theoretical predictions: given a certain level of social welfare payments, it is more likely to observe exits from social assistance to employment the higher an individual's (net) market wage. This is especially the case for households with an expected labor income higher than the social assistance level. Only if the household is able to improve its income through employment does the difference between the two income sources matter.

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[8] The corresponding likelihood is solved by applying Gauss-Hermite quadrature.

[9] Interpretation of the t-values of the variance parameters is not useful since ln(variance) being 0 means that the variance itself is equalling 1. Testing for the variance being 0 would mean to test ln(variance) equalling minus infinity, which is not feasible.

[10] The ratio takes on the value 1 if the potential labor income equals the welfare payment level and the value 1.5 if the potential labor income exceeds the social welfare payments by 50%.

Table 1

Discrete-Time Proportional Hazard Rate Models

Variable	Piecewise exponential model				Random effects piecewise exponential model			
	Transitions to Employment		Alternative Transitions		Transitions to Employment		Alternative Transitions	
	Coefficient	t-value	Coef.	t-value	Coefficient	t-value	Coef.	t-value
2 years	-0.41*	-1.89	-0.58***	-2.60	-0.36	-1.26	-0.33	-0.99
3 years	-0.33	-1.01	-0.68**	-2.04	-0.25	-0.58	-0.30	-0.58
4 years	-0.85	-1.64	-0.82*	-1.76	-0.76	-1.20	-0.35	-0.52
5 and more years	-1.34*	-1.85	-1.06*	-1.76	-1.24	-1.48	-0.52	-0.64
Year of observation								
1992	-0.51	-0.96	0.18	0.34	-0.52	-0.97	0.13	0.22
1993	-0.29	-0.62	0.15	0.30	-0.30	-0.61	0.09	0.17
1994	-0.18	-0.39	0.23	0.47	-0.17	-0.36	0.24	0.44
1995	-0.48	-1.03	-0.06	-0.13	-0.47	-0.99	-0.07	-0.12
1996	-0.72	-1.48	0.21	0.41	-0.71	-1.45	0.18	0.33
1997	-0.56	-1.19	0.01	0.01	-0.56	-1.18	-0.06	-0.12
1998	-0.15	-0.32	0.02	0.05	-0.13	-0.29	0.02	0.03
1999	-1.49***	-2.90	-0.98*	-1.80	-1.50***	-2.89	-1.06*	-1.80
December dummy	2.32***	16.06	3.03***	19.34	2.34***	14.97	3.12***	15.84
January dummy	-1.44**	-2.01	-0.55	-0.93	-1.44**	-2.01	-0.50	-0.84
East Germany	0.43*	1.94	0.36	1.52	0.45*	1.91	0.46	1.62
At least one adult household member with vocational training	0.18	0.96	-0.17	-0.93	0.18	0.93	-0.18	-0.83

(table 1 cont.)

At least one adult household member with school graduation	0.15	0.40	0.23	0.75	0.16	0.43	0.29	0.80
No partner household (female)	-0.66***	-3.71	0.17	0.95	-0.68***	-3.59	0.20	0.90
No partner household (male)	-0.58*	-1.68	0.13	0.42	-0.61*	-1.66	0.15	0.39
Adult household member aged > 50	-0.79***	-2.76	-0.40	-1.56	-0.81***	-2.72	-0.51	-1.61
Children aged 6 and younger	-0.25	-1.50	-0.13	-0.71	-0.26	-1.49	-0.15	-0.69
Children aged between 6 and 18	0.48***	2.61	0.10	0.47	0.49**	2.57	0.10	0.43
Non-German adult household member	-0.20	-1.09	0.19	1.03	-0.20	-1.07	0.29	1.15
Handicapped adult household member	-0.13	-0.46	-0.01	-0.03	-0.14	-0.49	-0.04	-0.13
Income Ratio lower equal 1	0.92	1.61	0.48	0.86	0.91	1.56	0.39	0.60
Income Ratio between 1 and 1.5	0.96**	2.31	0.29	0.42	0.96**	2.25	0.25	0.52
Income Ratio greater equal 1.5	0.64**	2.34	0.39	0.28	0.65**	2.30	0.40	1.23
Constant	-4.58***	-5.93	-5.17***	-6.62	-4.60***	-5.84	-5.44***	-5.55
$Ln(\sigma^2)$	–	–	–	–	-4.47	-0.07	-0.28	-0.33
$COV(\eta_1, \eta_2)$	–		–		-0.26 (-0.51)			
Log Likelihood	-1416.08				-1415.57			

579 spells, 7752 months, * significant at the 10 percent level, ** at the 5 percent level, *** at the 1 percent level.

Source: SOEP 1991 – 1999. Authors' calculations.

The relevance of incentive effects is underscored by the fact that skill indicators turn out to be insignificant. The effect of skill-biased demand seems to be minor compared to incentive effects. Excluding the ratio variables from the regression for robustness purposes, the coefficients of the skill indicators are positive but remain insignificant. However, the inclusion of the ratio variables clearly reduces the size of the coefficients and the corresponding t-values.[11]

The other relevant covariates for the transition from welfare to employment are quite similar, independent of whether or not we account for unobserved heterogeneity. Households in which the head or partner is older than 50 have a lower exit probability than younger households. Households in which the head is single have a significantly lower probability of leaving social welfare via employment than partner households. This effect is especially strong for women. The presence of children between 6 and 18 reduces the duration of welfare, while young children show no significant influence on this duration. One reason could be the low availability of subsidized child care slots, in particular for children aged 0–3 years. Households in East Germany exit faster to employment, which is surprising because of the relatively weak economic performance in the East. One possible (ad-hoc) explanation may be a relatively large number of transitions into publicly financed jobs (e.g. *Arbeitsbeschaffungsmaßnahmen* or *Strukturanpassungsmaßnahmen*) for unemployed persons in East Germany, but this has to be checked empirically.

5. Conclusion

The aim of the study was to estimate the influence of the ratio between estimated potential labor income and the welfare payment level on the probability of a transition from social welfare to employment. This ratio between the two income sources shows a positive effect on the probability of a transition to employment for households whose potential labor income exceeds their welfare payment level.

Our results are contrary to previous studies dealing with the determinants of welfare spell duration in Germany: we identify an effect of the income ratio according to the standard theoretical predictions. This "new" result derives from a simultaneous consideration of both sources of income, from a differentiation between transitions to employment and alternative transitions and additionally from a separated examination of households with an expected labor income lower than the level of social welfare payments.

The alternative explanation for low-skilled workers' higher likelihood of suffering long-term unemployment – that they receive job offers at a lower rate – turns out to be of minor relevance. Contrary to the ratio indicators, skill

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[11] These results are available from the authors upon request.

indicators are far from significant. The explanatory power of skills is out-weighed by incentive effects. However, controlling for the income ratio reduces the coefficients of the skill effects.

Overall, our results do not support the conclusion that the social assistance level in Germany is too high, because the amount of social assistance is related to a basic minimum income concept. A reduction of the social assistance level is not the only way to overcome the incentive problems of a transfer program; there also exist other possible solutions such as workfare.

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