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Department of Economics

Discussion Paper No.
October 2005

42

An Index of Generosity for the German UI-System

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Abstract

The generosity of unemployment insurance systems is constantly scrutinized by economists. Higher generosity of unemployment insurance (UI) - usually defined by referring to the replacement rate of the former wage - is commonly known to be associated with higher (equilibrium) unemployment.

Unfortunately, many theoretical and empirical studies suffer from their definition of *generosity*. Often only pecuniary properties of the UI-system are used to capture the generosity. It can be shown however, that other characteristics of UI-systems are equally or even more important in influencing individual behaviour and in affecting overall unemployment. Most notably this refers to the time-related aspects of UI-systems as the duration of benefits, the qualification period and the waiting period. The efficiency of administering the UI-system and the stringency of monitoring and sanctions also play an important role.

This paper goes beyond the usual calculation of replacement rates for the German UI-system. In order to get a better idea of the generosity of the German UI-system from 1967 to 2003, time-related rules in German UI laws and data reflecting the administrative efficiency are incorporated into several composite measures. Contrary to conventional perception, especially when citing replacement rates alone, the resulting indices indicate that the UI-system in Germany has become more generous since 1986. This increase in generosity can be identified as a factor being responsible for persistently high and rising unemployment in Germany over the last two decades.

Keywords: unemployment insurance; UI-generosity; index of generosity

JEL-classification: C43, J65

*I wish to thank Prof. Dr. Franco Reither and the participants of session No. 189 at the annual WEAI conference 2005 in San Francisco for their helpful and valuable comments. The usual disclaimer applies.

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1 Introduction

Unemployment insurance systems obviously make sense: UI-benefits allow unemployed people to search for a new job instead of accepting the first-best job offer. This facilitates the matching efficiency in an economy. Besides UI-systems are an important part of the welfare state as they prevent the unemployed from going from riches to rags. So, what is the problem with UI from an economist's viewpoint?

While the design of UI-systems on the one side fulfills the aims mentioned above it on the other side also causes a number of disincentives. The most prominent unwanted effect of UI-benefits is that they tend to prolong job-search beyond its efficient level. The usual suspect in triggering disincentives in insurance is the possibility of moral hazard behaviour by the insured. Disincentives in UI-systems are constantly identified to have adverse consequences on employment. When reading or hearing about these adverse consequences of UI one rarely encounters the term "disincentives". Instead the adverse effects of UI are often linked to the formulation "generosity of UI". Unfortunately it is often difficult to say what is meant by the generosity of UI. Furthermore it is even more difficult to quantify the generosity of real UI-systems. Normally only - or at least to a large extent - pecuniary aspects like the UI-benefits or the replacement rate are considered in this respect. But as Atkinson & Micklewright (1991) state, the level of benefits is merely one aspect of a whole system of rules. At least two categories of properties have to be added for a broader perspective on UI-generosity. The first category is those of the so called entitlement features, which define the time-related properties like the duration of benefits, the qualification period and the waiting period. The second category contains the so called eligibility features, which capture the rules of administration, especially those of monitoring and sanctions. The aim of this paper is to show that there are marked differences between capturing UI-generosity either by pecuniary aspects alone or by composite measures, which also account for entitlement and eligibility features. The German UI-system is taken as an example to demonstrate the validity of this hypothesis. To our knowledge this exercise has not been performed before.

The structure of the paper is as follows. Section 2 takes a brief look at what theory tells us about UI-generosity and its connection to (equilibrium) unemployment. Section 3 gives a quick overview over the German UI-system, i.e. the development of its most relevant properties. Section 4 then turns

to constructing a number of indices of UI-generosity.¹ This main section consists of three parts. We first look at what has already been done in this field. After that different methods of calculation are presented and evaluated. And finally we make some remarks on the overall usefulness of composite measures as a whole and for Germany in particular. Section 5 summarizes the findings and draws some conclusions.

2 Theoretical considerations

The following review of theoretical results is concerned with two questions:

1. What makes the amount of UI-benefits (i.e. the replacement rate of the former wage) so important?
2. Which role do other than pecuniary aspects of UI-systems play?

The underlying question is how and in which way the features of a UI-system shape individual (or collective) behaviour and eventually influence unemployment.

Four prominent kinds of models have to be taken into account. Among partial equilibrium models the static (or classical) labour supply model and search models are usually used to analyse the impacts of UI-benefits on individual behaviour. Among general equilibrium models the PS/WS-framework (the institutional approach) and matching models are most common in examining the influence of UI-systems on labour market outcomes. The classical labour supply model found in any textbook on labour economics might serve as a simple starting point. It suggests that the individual supply of labour - or rather the incentive to supply labour - becomes lower with rising UI-benefits. This is due to the fact that UI-benefits decrease the opportunity costs of leisure. On an aggregate level labour supply declines and, *ceteris paribus*, the equilibrium wage and (voluntary) unemployment rise. Instead of replicating the discussion on the many deficiencies of the static model we are more interested in its predictions on other characteristics of the UI-system here. Fortin (1984) extends the basic model by incorporating time-related properties of UI-systems, namely a qualification period M , a waiting period A and the duration of benefits D . The results regarding the effect of UI-benefits (the replacement rate) still hold in his

¹We will use the terms *index* and *composite measure* interchangeably.

model. The higher the replacement rate r , the lower is the individual incentive to work and the higher is the incentive to claim benefits. In addition to this, the individual incentive to work rises the longer the qualification period or the waiting period before receiving benefits are. A longer waiting period also makes claiming benefits less attractive. Contrary to this, the individual incentive to work and the incentive to claim benefits decline with the duration of benefits. Remarkably, in this model the adverse effect of D on individual labour supply is stronger than the effect of the replacement rate r .

The literature on search theory is extensive and the same is true for the literature on the role of UI in search processes on the labour market. Thus we will again concentrate on the main conclusions. Basic papers on search theory are for example Mortensen (1970), McCall (1970) and Lippman & McCall (1976), while Mortensen (1986) provides an overview regarding ideas, methods and results. The main notion is as follows: A simple flow approach to the labour market implies that $u^* = \frac{s}{s+f}$. Here u^* is the equilibrium unemployment rate, s is the separation rate (the flow into unemployment) and f is the job finding rate (the flow out of unemployment). Obviously equilibrium unemployment is higher the lower f is and the incentive to take up a job is lower, the higher the replacement rate r (the unemployment benefits b) is. Using the terminology of search theory: Higher unemployment benefits lead to a higher reservation wage, the reservation wage being the minimum wage a job seeker is willing to accept. With a higher reservation wage job seekers become choosier and the probability of accepting a job offer decreases. Accordingly, the hazard rate of leaving unemployment also decreases, job search is prolonged, the job finding rate declines and equilibrium unemployment rises.

The basic job search model predicts a stationary reservation wage over time. Several aspects, especially the erosion of human capital during unemployment spells or the stigmatising effect of unemployment, make this prediction questionable. Van den Berg (1990) develops a search model which traces back the nonstationarity of the reservation wage to the time-related properties of a UI-system. He shows that the reservation wage increases during a waiting period and it decreases over a confined duration of UI-benefits. Additionally, the reservation wage increases less during the waiting period when the duration of benefits is restricted. These findings have several implications. Firstly, a waiting period before receiving benefits induces a higher probability of accepting a job and therefore reduces the time spent search-

ing for a job. On aggregate this should entail a higher job finding rate and lower equilibrium unemployment. Secondly, a limited duration of benefits shortens the time spent searching for a job. On aggregate this should bring about a higher job finding rate and a lower unemployment rate. Thirdly, if a waiting period and a limited duration of benefits are used together the effect is stronger than the effect of using only one of the two. The second point is largely confirmed by empirical findings.² Most microeconomic studies find a positive correlation between the maximum duration of UI-benefits and the length of unemployment spells.³ The hazard rate of leaving unemployment rises considerably at the end of the maximum duration.⁴ This effect is also noticeably stronger in the absence of other social-benefit-systems, which would take effect after the exhaustion of UI-benefits. Interestingly, the evidence on the effect of the size of UI-benefits (or the replacement rate) is not that clear-cut after all. Many studies either find only small effects of the size of UI-benefits on the length of unemployment spells, identify effects only for specific groups or detect no effects at all.⁵ All this underlines the importance of non-pecuniary aspects of UI-systems once again.

Turning to general equilibrium models, the institutional (or structuralist) approach and matching models are most appropriate to analyse the effects of UI on (equilibrium) unemployment.

The institutional approach has its roots in the work of Carlin & Soskice (1990), Layard, Nickell & Jackman (1991) and Lindbeck (1993). Their starting point is the observation of incomplete competition on the goods and labour market resulting from institutional settings or regulations and individual or collective behaviour on these markets. Obviously, UI-systems belong to those regulations. The whole model can be condensed into two curves, namely PS (price-setting) and WS (wage-setting). PS works as the counterpart to the orthodox labour demand curve, while WS is the counterpart to the orthodox labour supply curve. As UI-systems exclusively influence wage determination in the PS/WS-framework, we can concentrate on the mechanisms behind WS for our purposes here. Two microfoundations of wage determination can be distinguished: wage bargaining and ef-

²See Devine & Kiefer (1991) for a survey of empirical methods and results regarding search theory in general and the role of UI in labour market search.

³See for example - among many others - Lindeboom & Theeuwes (1993).

⁴See for example Katz & Meyer (1990).

⁵See for example the opposite results of Hunt (1995) and Hujer & Schneider (1997) for Germany.

efficiency wages. Nevertheless, both lead to the same predictions regarding the properties of the UI-system. The (bargained) real wage increases, when unemployment benefits b (the replacement rate r) or the duration of benefits D increase. On the other hand the (bargained) real wage increases, when the qualification period M , the waiting period A or the efficiency of the UI-administration σ decrease. In the case of bargaining models this is due to the fact that a more generous UI-system leads to a better fallback-position for unions. Thus the mark-up on the alternative wage rises. In the case of efficiency wage models better outside options of workers (better conditions when unemployed) decrease the disciplining effect of a potential layoff. Thus efficiency wages need to be higher. Graphically speaking more generous UI-systems lead to an outward shift of the negatively sloped WS-curve in the $w - u$ -space. With the positively sloped PS-curve unchanged this eventually leads to higher equilibrium unemployment. In summary equilibrium unemployment in this model is higher, the higher b (r) or D or the lower M , A or σ are.⁶ Apart from these comparative-static predictions a central dynamic result can be obtained. Features of UI-systems prolonging job search (and thereby facilitating the depreciation of human capital), especially the duration of benefits and the level of benefits, tend to increase the persistence of unemployment. Hence, adverse employment shocks are less easily absorbed with generous UI-systems in place.⁷

Matching-models constitute the second class of general equilibrium models which are nowadays very often used in examining labour market phenomena. Early papers on this topic are Diamond (1982a, b), Mortensen (1982a, b) and Pissarides (1985); an overview can be found in Mortensen & Pissarides (1998) or in the text book by Pissarides (2000). Matching-models can be characterized as models of bilateral search: The unemployed are searching for a vacancy and firms are seeking to fill vacancies. In this respect matching-models are general equilibrium search models, because the behaviour of firms

⁶One can use the following memory hook. The fraction of the unemployed entitled and eligible to receiving benefits γ is a function of the non-pecuniary aspects of the UI-system:

$$\gamma = \gamma(\bar{M}, \bar{A}, \bar{D}, \bar{\sigma}) \quad \text{with} \quad 0 \leq \gamma \leq 1. \quad (1)$$

The higher γ is, the more generous the UI-system is and the more harmful are its effects on unemployment.

⁷Phelps (1995), p. 228, puts it as follows: "A long-noted source for hysteresis is the dole." See also Blanchard & Wolfers (2000) and Ljungqvist & Sargent (1998) for the interaction of shocks and institutions.

(the demand side for labour) is also explicitly modelled. A match is formed when an unemployed job-seeker and a vacancy meet. A match is destroyed when the job is destroyed. Regardless of how the process of job destruction - either exogenous or endogenous - is modelled, the predictions are the same. When r (b) or γ increases, i.e. when either D increases or when A , M or σ decrease, equilibrium unemployment increases. Two explanations can be brought forward for these results. Firstly, with a more generous UI-system the conditions for the unemployed improve, decreasing their costs of unemployment and thus making them choosier in taking up a new job due to a higher reservation wage. This resembles the partial equilibrium arguments in the static labour supply model or the search model. Secondly, a more generous UI-system adversely affects job creation because it exerts an upward pressure on wages (in models with exogenous job destruction) or on the reservation productivity (in models with endogenous job destruction). This is similar to the reasoning of the institutional approach. Putting both effects together, one gets a distinct proposition for the effects of a generous UI-system: As the duration *and* the incidence of unemployment increase with r (b) or γ equilibrium unemployment is also increased. Note that the result is stronger than in the pure search model, where the overall effect is only driven by the longer duration of unemployment.

A few remarks on the role of the stringency and the efficiency of the administration of the UI-system are helpful. What is meant by *stringency and efficiency of the administration*? The term stringency alludes to all eligibility rules of a UI-system, e.g. the obligation for active job search, the standards under which a job offer has to be accepted and the sanctions in case of detected misbehaviour. The term efficiency hints at the way existing rules are administered and enforced and at how rigorous UI-recipients are monitored and sanctioned. In recent years especially the role of monitoring and sanctions has attracted some attention in the literature. Calibrated search or matching-models like Ljungqvist & Sargent (1995), Boone & van Ours (2000), Boone et al. (2001) and Fredriksson & Holmlund (2003) deliver some clear-cut results. Monitoring and sanctions are necessary elements of UI-systems, they act welfare-enhancing and they are usually too modest in the real world. Experimental studies like Johnson & Klepinger (1994), Dolton & O'Neill (1996) or van den Berg & van der Klaauw (2001) and econometric studies like Abbring et al. (2000) or Lalive et al. (2002) seem to confirm these conclusions. Monitoring and sanctions (and even the threat of sanctions) usually lead to higher hazard rates of leaving unemployment

and shorter durations of unemployment. Thus, when looking at the overall generosity of UI-systems, the administrative norms also have to be taken into account.

The preceding theoretical considerations offer two main insights. Firstly, it is too simple to use the replacement rate (or the level of UI-benefits) as a measure to capture the generosity of UI-systems. The entitlement and the eligibility rules are equally and sometimes even more important in shaping individual behaviour and labour market outcomes. Secondly, there exists a positive correlation between overall generosity and (equilibrium) unemployment.

The second conclusion requires some mitigating remarks. While UI clearly has unwanted side-effects it also has positive effects and well-defined aims. Consumption smoothing effects, the ability to work as an automatic stabilizer and its role as a search subsidy that improves matching efficiency are normally named in this respect. But these effects only seem to work to a certain extent. After a critical value⁸ of generosity [disincentives] these positive effects are outweighed by the negative effects. Figure 1 draws a stylized picture of this relationship.

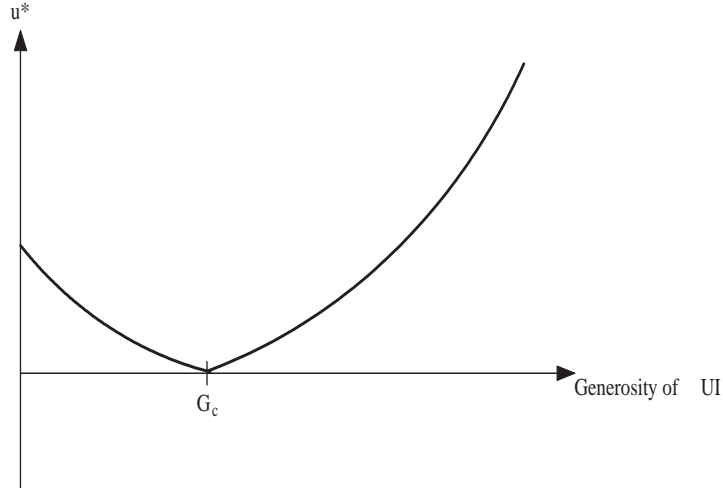


Figure 1: UI-generosity and equilibrium unemployment

⁸In the sense of optimal level of UI-generosity not optimal UI, with the latter looking at certain features of UI and not relating to equilibrium unemployment but to some kind of welfare measure.

For most developed countries we can presume, that $G \geq G_c$, implying adverse consequences for (equilibrium) unemployment.⁹ The next sections examine the aspects of the German UI-system relevant for assessing its generosity in more detail.

3 A short description of the German UI-system

This section briefly describes the development of the German UI-system and of its main properties.

Three laws were setting the rules for the German UI-system since World War II¹⁰: Until 1969 the *Gesetz über Arbeitsvermittlung und Arbeitslosenversicherung* (AVAVG) was in effect. The *Arbeitsförderungsgesetz* (AFG) was valid from 1969 until 1997. In 1998 the AFG was replaced by the *Sozialgesetzbuch III* (SGB III). The AVAVG from 1927 first installed a state-run and compulsory UI-system in Germany based on insurance instead of welfare principles. In 1952 the *Bundesanstalt für Arbeitsvermittlung und Arbeitslosenversicherung* was founded, which was from then on responsible for the administration of the UI-system. The three-level organisational structure of those days is still in place today.¹¹ After the recession of the years 1967/68 the AFG of 1969 reflected the belief, that economic policy is able (and obliged) to shape and control economic and structural change. The noticeable expansion of active labour market policies was one of the main consequences. Due to financial problems of the UI-system because of the two oil-price hikes in 1973 and 1978/79 and the ensuing recessions the originally structural aims of the AFG were quickly trimmed by reality. Nevertheless only symptomatic adjustments were made over nearly two decades. Even after German re-unification it took until 1998 to start a systematic overhaul of the UI-system. With the SGB III of 1998 the individual responsibility for labour market success was re-emphasized; the insurance aspect of the UI-system was strengthened and job search via better search assistance was

⁹In accordance with the common view on the German UI-system we assume here that this is indeed the case and we will not further elaborate on the validity of this presumption.

¹⁰See for example Lampert & Althammer (2001) for the following historical remarks.

¹¹In the terminology after the administrative reforms of 2004 this means: The *Bundesagentur für Arbeit* acts as the central administration, the *Landesarbeitsämter* work at the regional level and the *Arbeitsagenturen* work at the local level.

supposed to be facilitated.¹²

The following paragraphs are concerned with the main features of the German UI-system, which seem relevant for evaluating its generosity.¹³

1. The statutory replacement rate

With regards to the statutory replacement rate, two observations are worth mentioning. Firstly, in 1984 the statutory replacement rate was differentiated into a rate for unemployed with children (68,0%) and a rate for unemployed without children (63,0%). Secondly, the statutory replacement rate has only been changed for a few times, namely in 1969 (decrease from 70,5% to 62,5%), in 1975 (increase from 62,5% to 68,0%) and in 1993 (decrease from 68,0% to 67,0% and from 63,0% to 60,0%, respectively). This lack of fluctuation in the statutory replacement rate suggests that this indicator alone would not be able to explain any measurable change in unemployment. Hence, this gives a hint at why other features also have to be incorporated into a measure of UI-generosity.

2. Waiting period, qualification period and benefit duration

A (negligible) waiting period A only existed until 1969. It lasted 3 days and was completely abolished afterwards.

The qualification period M was 6 months until 1981 and was raised to 12 months in 1982. This qualification period is still valid today.¹⁴

The particularly interesting duration of benefits D encountered one central change in 1985. At the beginning of 1985 the duration of benefits was prolonged for the older unemployed (over 49 years of age) who fulfilled a certain qualification period. This rule was expanded in 1986 and 1987 by prolonging the maximum duration and by reducing the necessary age for being able to claim extended benefits. While the age rule was tightened in 1998, the maximum duration was even further extended.¹⁵ At the beginning of 2004

¹²Nowadays this runs under the formulation *Fördern und Fordern*, which might best be translated as *assist and demand*.

¹³Though the contribution rate to the UI-system does not belong to these features, it is interesting to note that it rose from 1,3% in 1962 to an actual value of 6,5% in 2005. The contribution rate is paid in equal parts by the employers and the employees. Its rise reflects the increased financial needs of the UI-system.

¹⁴Additionally, the qualification period had to be fulfilled within the preceding two years until 1969. Between then and 2003 this time span was three years. At the beginning of 2004 it was reduced to two years again.

¹⁵For example, from 1987 to 1997 it was possible for a 54 year old claimant to receive

this rule was drastically changed, as a 55 year old claimant henceforth could receive benefits for up to 18 months if he has fulfilled a qualification period of 36 months before that. Only the last modification did not ignore the theoretical and empirical recommendations which were named in section 2.

3. Monitoring and sanctions

Until 1993 monitoring of beneficiaries consisted exclusively in the obligation to regularly report to the unemployment agency; these rules were only marginally tightened over time. The possibility for "real" monitoring by verification of selected beneficiaries was implemented in 1993, but it is unknown to what extent the administration makes use of this rule.

Until 2003 sanctions were mostly confined to the instrument of sanction periods.¹⁶ Only recently with the beginning of 2004 a reduction of benefits is possible if the unemployment agency is notified too late about the (future) status of unemployment by the individual.

4. Other features

Two other features of the German UI-system are worth mentioning, namely the obligation to search actively and the definition of the suitability of a new job.

Interestingly the obligation for active search was not introduced until 1998. This underscores the attitude (of the authorities) towards the UI-system in the preceding years as a primarily passive instrument to support the unemployed.

The definition of the suitability of a job was regularly changed and even more often discussed in Germany. For politicians the rules of suitability were a grateful playing field either to show their concern for the unemployed (by loosening the rules) or to show their willingness to put additional pressure on the "lazy" unemployed (by tightening the rules). For the public these rules belong to the most prominent indicators of UI-strictness. Viewed ratio-

benefits for as long as 832 days if he worked for 1920 days within the preceding 7 years. From 1998 to 2003 a 57 year old claimant could receive benefits for 32 months if he previously fulfilled a qualification period of 64 months. All in all this rule-change led to a huge increase of "artificial early retirements" at the expense of the UI-system: Firms were able to lay off older workers who were "parked" in unemployment until they officially retired.

¹⁶For major deviations this sanction period lasted 4 weeks until 1981; from 1982 to 1993 it lasted 8 weeks and since 1998 it is as long as 12 weeks.

nally one can state that rules of suitability are on the one hand a necessary element of UI-systems. But on the other hand they are often overrated in their ability to fundamentally influence individual behaviour, i.e. benefit recipiency, and overall unemployment.

The episode of the so-called Hartz-commission of 2002 and the reforms which resulted from its recommendations form an instructive end of this section. The Hartz-commission was installed to make proposals for the improvement of labour market instruments and for administrative reforms. While hopes were high and some of its suggestions were - at least by German standards - innovative, the resulting law changes and the effects on the labour market are somewhat sobering. A considerable number of suggestions was either reduced to small pieces by the political process or not implemented at all. Most reforms which were realized did not basically alter the UI-system anyway; only the reduction of the benefit duration for the older unemployed mentioned above, a new definition of suitability and some administrative changes can be counted in this regard.¹⁷ Though it is too early to make a final judgement on the effects of the Hartz-reforms, as some of its measures still need time to fully operate, it is safe to say that the officially announced goal of cutting German unemployment in half was far too optimistic (or simply naive).

4 An extended index for the generosity of the German UI-system

As the theoretical considerations in section 2 showed an index of generosity only on the basis of replacement rates is too crude. This section takes the German UI-system as an example to demonstrate what has to be done to paint a broader picture of UI-generosity by incorporating additional features. In order to do this we begin with a quick overview over other indices (not necessarily for Germany) which have been used before in similar studies.

¹⁷The most important consequence of the Hartz-reforms was the merging of Arbeitslosenhilfe (unemployment assistance) and Sozialhilfe (social benefits) at the beginning of 2005. This reform was long overdue, because until then two different benefit-systems with different levels of benefits and different authorities being responsible for them - the local authority managed and paid the social benefits and the federal government managed and paid the unemployment assistance - co-existed.

After that several methods of calculation will be presented to generate an extended index of generosity for the German UI-system. Some preliminary test results on the explanatory power of these summary measures regarding unemployment in comparison with other variables will be presented in the last subsection.

4.1 Existing summary measures and indices

Two types of studies can be distinguished when speaking of existing indices. On the one hand, index-oriented studies explicitly aim at constructing summary measures to capture the design of benefit systems. On the other hand, many macroeconomic studies make use of different kinds of variables to reflect the generosity of UI-systems.

With regard to index-oriented studies particularly the calculations offered by the OECD deserve special attention. In the 1994 OECD jobs study a summary measure of benefit entitlements was computed for 21 OECD-countries. For typical cases of unemployment a total of 18 gross replacement rates per country were calculated.¹⁸ These gross replacement rates are found by dividing the annual benefits of the unemployed by the annual gross income of the employed. The annual gross income is approximated by the average production worker wage. The unweighted mean of the resulting 18 gross replacement rates finally leads to the summary measure of benefit entitlements.¹⁹ Surprisingly, the results for Germany show only little fluctuations within a narrow band: From 1961 to 1999 the summary measure of benefit entitlements ranged between 0.27 and 0.31.

Apart from gross replacement rates the OECD regularly calculates net replacement rates. Both measures differ in some noteworthy respects. Firstly, other not unemployment-related benefits (e.g. benefits for children) are also taken into account. Secondly, all benefits under consideration are set in relation to the net wage including benefits during employment. The Dutch Central Planning Bureau (1995) uses a similar method to determine net replacement rates for a number of countries.²⁰ Though the results for some

¹⁸The 1998 OECD jobs study expanded this number to 24.

The representativeness refers to the duration of the unemployment period, the family status and the former wage level.

¹⁹See Martin (1996) for a more detailed description of the whole procedure.

²⁰Several publications offer a comparison of the calculation of net replacement rates by the OECD and the CPB. See especially CPB (1995), Martin (1996), Salomäki & Munzi (1999) and Salomäki (2001) on thorough discussions of this issue.

countries differ markedly between the OECD and the CPB this is not the case for Germany. Germany's net replacement rate is usually found to be somewhere between 0.60 and 0.65. In principle, net replacement rates aim at comparing the income positions of the employed and the unemployed. Nevertheless, the generosity of the UI-system is intentionally only a part of the whole calculation. Accordingly, net replacement rates of this kind are not suitable for our purpose here and they will not be pursued any further. In addition to index-oriented studies, macroeconomic studies looking for explanatory variables for unemployment often use different (summary) measures to capture the generosity of UI-systems. Early studies like Maki & Spindler (1975), Grubel, Maki & Sax (1976) or Grubel & Maki (1976) simply make use of the replacement rate r . Later studies acknowledge the importance of other features of the UI-system and thus use composite measures. To name a few, Keil & Symons (1990) employ the measure $r \cdot Coverage$ ²¹, Lemieux & MacLeod (2000) use $r \cdot \frac{D}{M}$, Fortin (1989) uses $r \cdot \frac{D}{M} \cdot Coverage$ and Sargent (1995, 1998) employs a composite measure based on individual behaviour. In the tradition of these more recent studies, and because of the theoretically sound foundation of a wider definition of UI-generosity, the following subsection constructs a new index of generosity for the German UI-system.

4.2 A new index of generosity

Atkinson & Micklewright (1991) make a strong point in stating that it would be overly simple to capture UI-generosity by the replacement rate alone. Besides, the theoretical considerations emphasized the importance of other elements of UI-systems. The most relevant features are:

1. The replacement rate(s),
2. the entitlement rules, consisting of
 - the duration of benefits,
 - the length of the qualification period and
 - the length of the waiting period and
3. the eligibility rules defining the behavioural rules while being unemployed (and defining how these rules are implemented)²².

²¹The coverage is the rate of beneficiaries of all unemployed.

²²This eventually determines the efficiency of the administration.

With special reference to the German case we first try to identify how these three components should be measured. Then we apply our findings to construct a number of composite measures and indices of UI-generosity. Starting with the replacement rate, it is obvious that there is no such thing as *the* replacement rate. There are numerous ways to calculate replacement rates depending on the research topic. The nominator for example might contain only certain benefits (like unemployment benefits) or it can consist of a sum of benefits, as in the OECD (or CPB) net replacement rates. The denominator for example can either reflect gross or net values or it can refer to a certain income or wage level (like the average production worker wage). Hence, in reality a large number of replacement rates exists.²³ The OECD or CPB net replacement rates were already identified as being inappropriate for our topic here. The OECD gross replacement rate - even if the examination is confined to the UI-related cases - is also not the best fit for Germany. The reason is that the OECD relates benefits to gross earnings. This is unproblematic as long as the benefits are on a gross basis too. But as UI-benefits are paid on a net basis in Germany the results quickly become distorted. In order to receive a broader picture and for reasons of comparison we nevertheless show results for the gross replacement rates in Germany in table 1 in the appendix. Knowing that UI-benefits are paid on a net basis it makes sense to relate them to net income to receive better results. To avoid confusion with the OECD net replacement rate, these results are called effective replacement rates. Again table 1 in the appendix gives the values we found.

All this being said, both the gross replacement rate and the effective replacement rate suffer from one deficiency as both use real world data. This leads to a bias mainly driven by the development of wages, the wage structure and the structure of unemployment. Additionally, every now and then law changes aim at altering the determination base for benefits. This also affects gross and effective replacement rates. The lone unbiased replacement rates are statutory replacement rates. From our point of view the design of UI-systems is best described by legal replacement rates which reflect the desired replacement rates (and the goals of legislation). One important remark has to be made regarding legal replacement rates in Germany. In 1984 the legal replacement rate was differentiated into a normal rate for unemployed

²³That is the reason why for instance the OECD offers results on gross replacement rates and on net replacement rates and why these are unweighted averages of 18 or 24 different replacement rates.

with children²⁴ and into a reduced rate for unemployed without children²⁵. This differentiation is still in effect today. There are two ways to merge the two rates into one. One can either use the arithmetic mean or the weighted mean, with the latter taking care of the share of people receiving the reduced rate. The share of people receiving the reduced rate in Germany is usually somewhere between 65 and 72%. As the weighted mean is more meaningful, it will be used for the rest of our study. All legal replacement rates mentioned before can be found in table 1 in the appendix for the years 1967 to 2003.

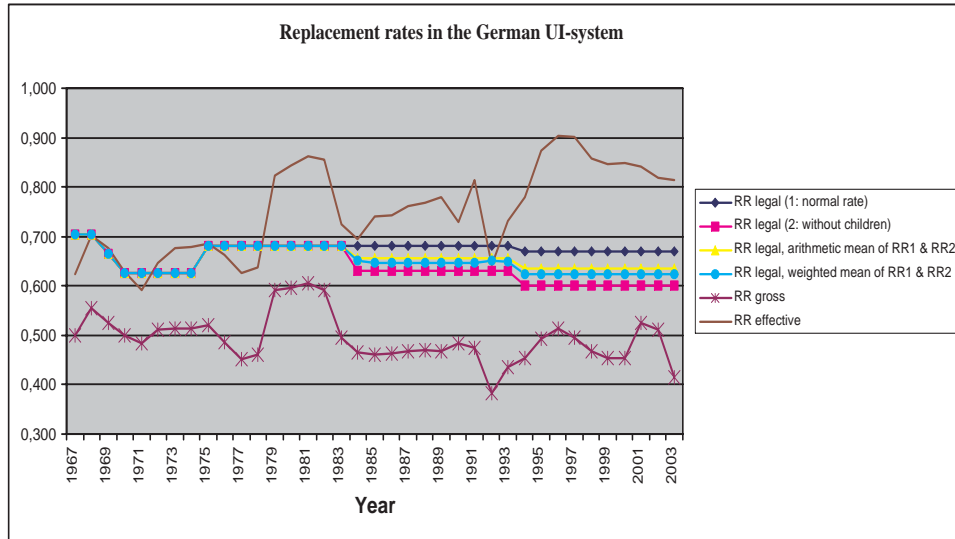


Figure 2: Replacement rates in the German UI-system (1967-2003)

In figure 2 the results regarding German replacement rates from 1967 to 2003 are summarized graphically. The most interesting observations are the following. Not surprisingly, the legal replacement rates show little fluctuation. If anything they declined by a small amount over time. The weighted mean is constantly below the arithmetic mean, because the share of unemployed receiving the reduced rate ($RR2$) has constantly been above 50% since the differentiation of rates was installed. The fluctuation in the replace-

²⁴We will call this $RR1$.

²⁵We will call this $RR2$.

ment rates based on real world data is considerably stronger. Qualitatively the gross and the effective replacement rates deliver quite similar pictures. Noteworthy periods are the decline from 1975 to 1977, the sharp increase from 1978 to 1979, the sharp decrease from 1982 to 1984, the decline from 1991 to 1992, the rise from 1992 to 1996 and the gradual decline since then. Obviously all these changes show no connection to changes in the UI-system itself (maybe apart from the years 1983/84), as either the legal replacement rates remained untouched over those time periods or even moved into the opposite direction. Thus, probably other factors like cyclical up- or downswings, a changing structure of unemployment or the development of wages drive the variation of the gross and the effective replacement rates. This leads us to suspect that legal replacement rates are more appropriate in capturing the pecuniary element of UI-generosity.

In comparison to replacement rates it is far easier to identify the adequate data on entitlement rules. While it is possible to collect data on the average duration of benefits, there are no data available on effective qualification periods. Instead one can simply use the rules on the duration of benefits, the qualification period and the waiting period which can be found in German laws. In accordance with other studies²⁶ we will use the D/M-rate (the rate of the benefit duration over the qualification period). Though at first sight the German rules in this respect look rather complicated, they imply exact D/M-rates within certain time periods. The D/M-rates for the years 1967 to 2003 can be found in table 2 in the appendix. A negligible waiting period of three days existed only until 1969. After that no waiting period existed at all. Hence it is justified to exclude the waiting period from the calculations.²⁷

Finally one needs an idea how to quantify the eligibility rules. These rules - among others - define when a person is counted as unemployed (and eligible), when the flow into unemployment is regarded as sanction-free, and

²⁶See for example Milbourne, Purvis & Scoones (1991) or Lemieux & MacLeod (2000).

²⁷If a significant waiting period A in an UI-system existed, the fraction $\frac{D}{A+D}$ should be included too.

they make the obligation to search actively and determine the suitability of a new job.²⁸ A direct quantification of eligibility rules is obviously impossible as some of them are only qualitative (and verbal) definitions. Therefore another route has to be taken and a promising way to do this is to use the effects of eligibility rules which are reflected in administrative data. The quota of blocking periods²⁹ ($Qbp = \frac{\text{Number of blocking periods}}{\text{Beneficiaries} + \text{Number of blocking periods}}$) can give a first impression of how stringent the eligibility rules are *and* how stringent they are implemented. Again the data can be found in table 2 in the appendix. They show a steady decline in the quota of blocking periods until 2003. This seems counterintuitive as most rule changes regarding eligibility aimed at making the rules more stringent, but probably this development is a sign for the deterring effects of blocking periods. Grubb (2000) claims that the stringency of rules is multiplicatively (and not additively) connected to their implementation, because a rule is useless as long as it is not verified whether the rule is obeyed. Consequently the quota of blocking periods can only be first approximation for the effects of eligibility rules. Fortunately it is possible to calculate the quota of granted requests ($Qgr = \frac{\text{Number of approved claims}}{\text{Number of claims}}$) for Germany too. This has the advantage that Qgr gives additional hints at how efficient the UI-administration works. Interestingly the quota of granted requests shows only little fluctuation over time. It reached its peak in 1999 with a value of 97.63% and it reached its all time low in 2002 with 89.20%. There seems to be no connection with any rule changes which on the other hand seems to confirm that Qgr reproduces the administrative efficiency quite well. Putting Qbp and Qgr together by simply calculating $(1 - Qbp) \cdot Qgr$ one gets a formula to construct a time series for the Eligibility ($El.$):

$$\text{Eligibility} = (1 - Qbp) \cdot Qgr \quad (2)$$

The data for the quota of granted requests and for the eligibility for the years 1967 to 2003 once again can be found in table 2 in the appendix.

²⁸See OECD (2000) and Grubb (2000) for a more detailed discussion of eligibility rules. Both emphasize the economic meaning of eligibility rules, which aim at increasing the search intensity and at reducing the reservation wages of the unemployed.

²⁹A blocking or sanction period is imposed, when a benefit recipient does not comply with the behavioural rules while unemployed.

The eligibility shows a little more fluctuation over time than the quota of granted requests and no obvious trend like the quota of blocking periods. The eligibility reached an all time high in 1999 at 0.9650 and an all time low in 1980 at 0.8617.

Some studies use a different approach to capture the entitlement and the eligibility rules in accounting for the so called coverage.³⁰ The coverage is defined as $\frac{\text{Number of people receiving UI-benefits}}{\text{Number of people unemployed}}$. In order to allow comparisons between the approaches at hand, we also constructed the coverage data series for the years 1967 to 2003 for Germany. These results are also shown in table 2 in the appendix. The coverage of the German UI-system has clearly declined over the years. Only some deviations from this trend on cyclical grounds or because of exogenous shocks like the oil price hikes or German re-unification can be identified. This leads us to suspect that factors like growing long-term unemployment or the business-cycle play an important role in shaping the coverage. This must be kept in mind when interpreting composite measures using data on coverage.

What remains to be done is to merge the data we have into a composite measure (or an index). To be able to compare all results and to partially replicate the procedure of other studies a total number of 12 composite measures was constructed. Indices I to IV rely upon the weighted replacement rates, indices V to VIII use the effective replacement rates and indices IX to XII take the gross replacement rates into account. Successively either more or alternative information on the effects of the entitlement and the eligibility rules is included:

$$\text{Index I} = RR_w \cdot \frac{D}{M}. \quad (3)$$

$$\begin{aligned} \text{Index II} &= RR_w \cdot \frac{D}{M} \cdot \text{Eligibility} \\ &= \text{Index I} \cdot \text{Eligibility}. \end{aligned} \quad (4)$$

$$\text{Index III} = RR_w \cdot \text{Coverage}. \quad (5)$$

$$\text{Index IV} = RR_w \cdot \text{Coverage} \cdot \frac{D}{M} \quad (6)$$

³⁰See for example the composite measures in Fortin (1989) or in Keil & Symons (1990).

$$= \text{Index III} \cdot \frac{D}{M}.$$

$$\text{Index V} = RR_{eff} \cdot \frac{D}{M}. \quad (7)$$

$$\begin{aligned} \text{Index VI} &= RR_{eff} \cdot \frac{D}{M} \cdot \text{Eligibility} \\ &= \text{Index V} \cdot \text{Eligibility}. \end{aligned} \quad (8)$$

$$\text{Index VII} = RR_{eff} \cdot \text{Coverage}. \quad (9)$$

$$\begin{aligned} \text{Index VIII} &= RR_{eff} \cdot \text{Coverage} \cdot \frac{D}{M} \\ &= \text{Index VII} \cdot \frac{D}{M}. \end{aligned} \quad (10)$$

$$\text{Index IX} = RR_{gr} \cdot \frac{D}{M}. \quad (11)$$

$$\begin{aligned} \text{Index X} &= RR_{gr} \cdot \frac{D}{M} \cdot \text{Eligibility} \\ &= \text{Index IX} \cdot \text{Eligibility}. \end{aligned} \quad (12)$$

$$\text{Index XI} = RR_{gr} \cdot \text{Coverage}. \quad (13)$$

$$\begin{aligned} \text{Index XII} &= RR_{gr} \cdot \text{Coverage} \cdot \frac{D}{M} \\ &= \text{Index XI} \cdot \frac{D}{M}. \end{aligned} \quad (14)$$

The ensuing results are summarized in table 3 in the appendix. The figures 3, 4 and 5 give graphical illustrations. Figure 3 illustrates the composite measures I to IV on the basis of the weighted legal replacement rates, figure 4 shows the composite measures V to VIII on the basis of the effective replacement rates and figure 5 represents the composite measures IX to XII on the basis of gross replacement rates.

What we observe is the following. Index I shows little change until 1982. After that it declines until 1986 and rises considerably until 2003. In principle the same holds true for Index II, with the exception that it slightly decreased from 1999 to 2003. While both mainly rose between 1986 and 2003 due to increases in the D/M-rates, the recent decline in the eligibility is responsible for the decrease of Index II over the last five years under consideration. Qualitatively the pictures regarding Index III and IV look similar to Index I and II. The exceptions are a more pronounced rise from 1973 to 1975, a visible decline from 1975 to 1982, a more moderate decline

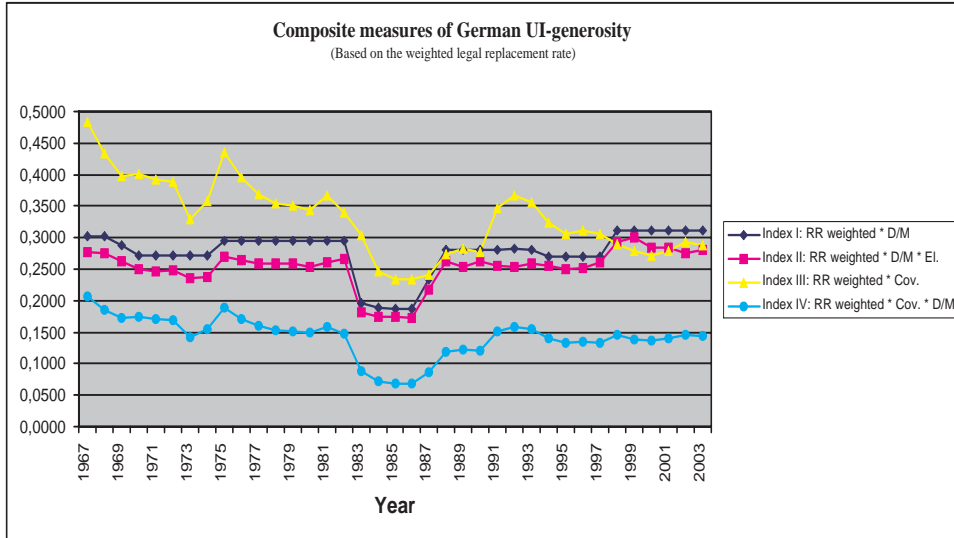


Figure 3: Composite measures of German UI-generosity on the basis of the weighted legal replacement rate (1967-2003)

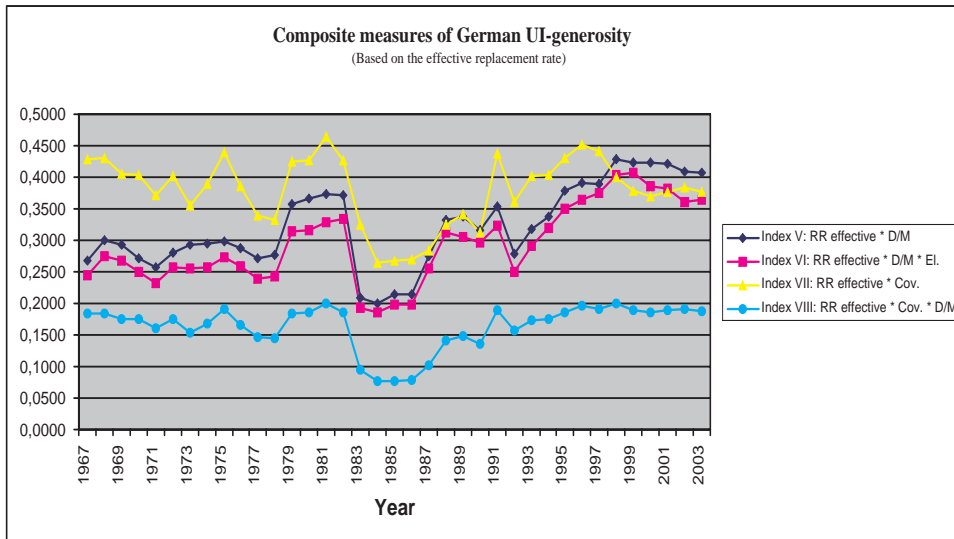


Figure 4: Composite measures of German UI-generosity on the basis of the effective replacement rate (1967-2003)

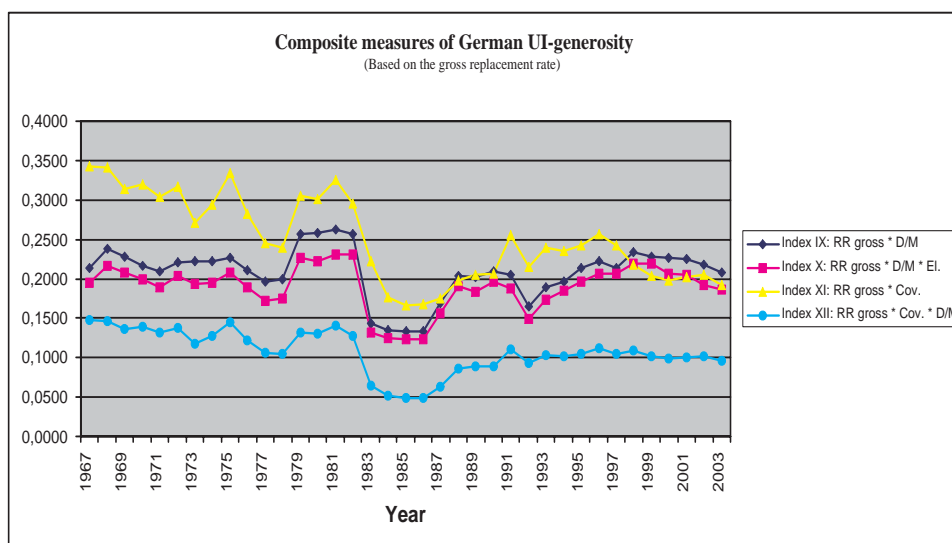


Figure 5: Composite measures of German UI-generosity on the basis of the gross replacement rate (1967-2003)

from 1982 to 1986 and a rise from 1990 to 1992. The reason for this is the same in all periods as the development of Index III and IV is significantly influenced by the coverage and its counter-cyclical behaviour.

Looking at the Indices V to VIII based on the effective replacement rates, the picture is a little different though not contradictory. Index V and VI show an increase in generosity from 1967 to 2003 and from 1986 to 2003. The fluctuations are stronger than in the cases of Index I and II simply because of the different replacement rates used here. Especially for the time from 1978 to 1982 this explains the sharp rise and the visible fall from 1991 to 1992 of the Indexes V and VI. The similar argument holds for the development of the Indices VII and VIII. Deviations from the Indices III and IV can be traced back to the use of the effective instead of the weighted legal replacement rates.

While the preceding considerations are also a good description of the Indices IX to XII, there is one notable exception. All indices on the basis of the gross replacement rate show a decline since 1998. We suspect that the moderate wage increases of late are the driving factor behind this. Apart

from this the Indices IX and X (like I and II) rose between 1986 and 2003 but they have not changed much from 1967 to 1986. The Indices XI and XII look similar to III and IV as they declined from 1967 to 2003.

To make things somewhat more transparent, a *true* Index was also constructed on the basis of all composite measures. The reference year for the true indices is 1970 as that was the year the AFG took full effect after it was installed in 1969. The level of generosity for the reference year was set to 100 and the true indices were calculated as $\frac{Index^t}{Index^{1970}} \cdot 100$ for all Indices from I to XII. Hence, the resulting numbers for each year express - in percentage terms - how much more (or less) the UI-generosity based on the different composite measures was in comparison to the reference year. The results can be found in table 4 in the appendix. The figures 6, 7 and 8 represent the results graphically. A discussion appears redundant as the main points were already made.

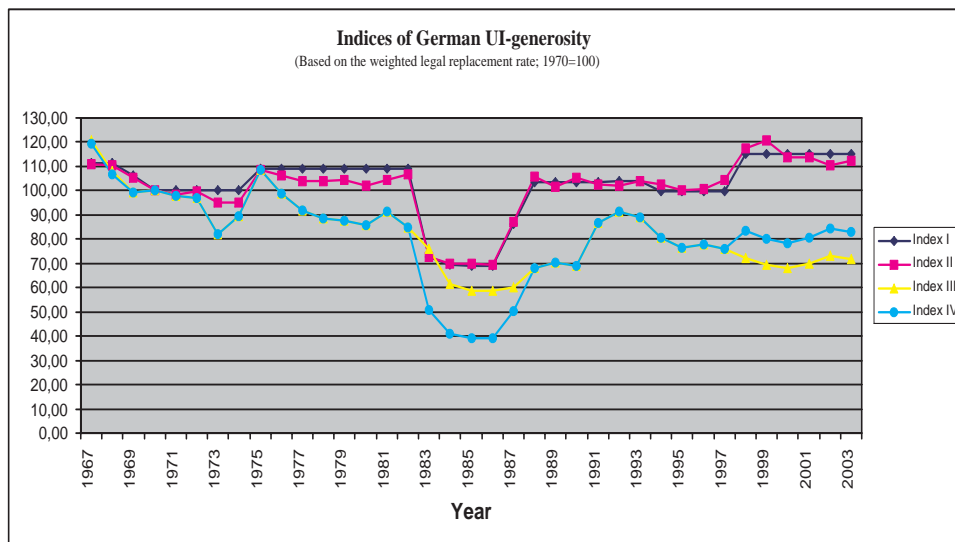


Figure 6: Indices of German UI-generosity on the basis of the weighted legal replacement rate (1967-2003); 1970=100

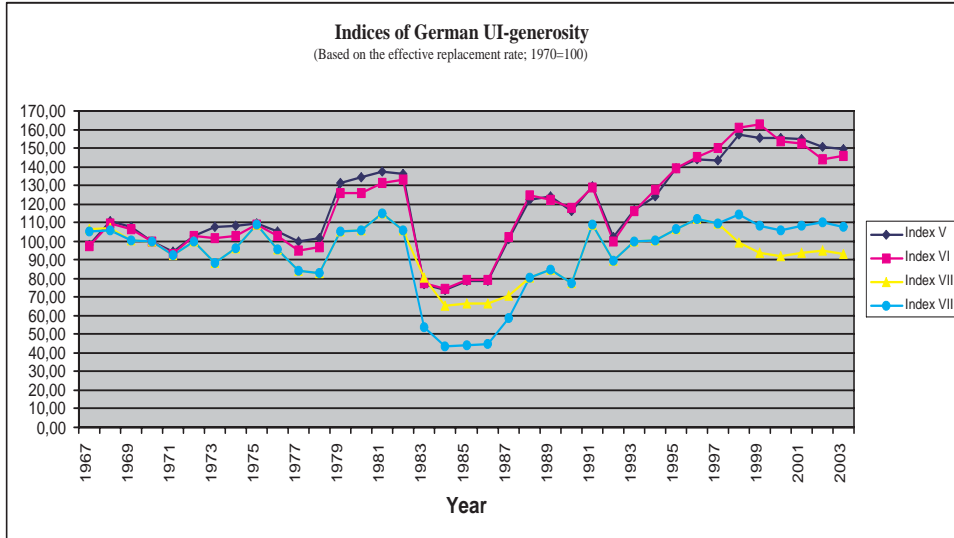


Figure 7: Indices of German UI-generosity on the basis of the effective replacement rate (1967-2003); 1970=100

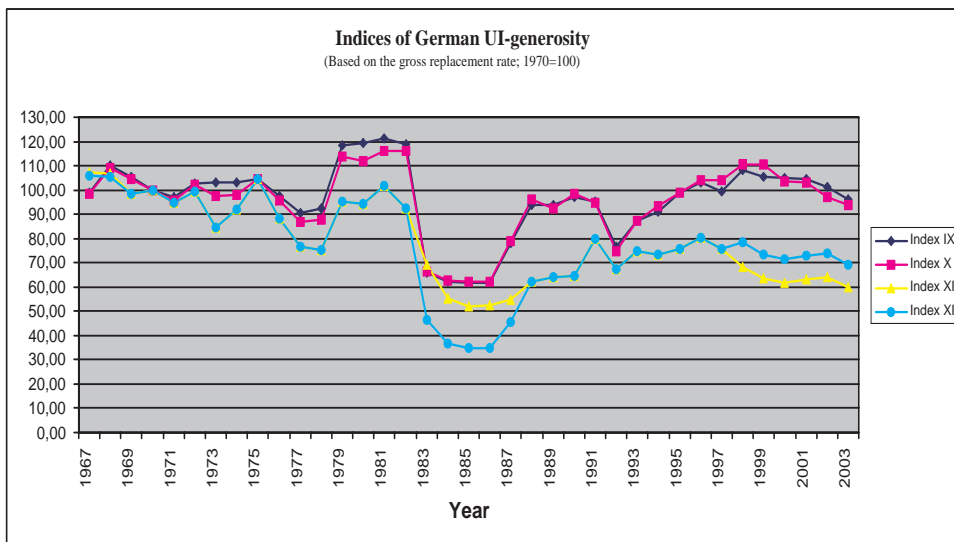


Figure 8: Indices of German UI-generosity on the basis of the gross replacement rate (1967-2003); 1970=100

What can we conclude from the inspection of all indices?

Regardless of which replacement rate is used, the generosity of the German UI-system since 1986 has clearly increased. The factor mainly responsible for this is the D/M-rate which was drastically increased in 1987 and since then was either left untouched or slightly increased. The decrease of the D/M-rate from 1982 to 1983 was also responsible for the sharpest drop of UI-generosity over the time span of 1967 to 2003; interestingly this is also valid for the Indexes III, VII and XI which do not even include the D/M-rate.

When looking at the whole time horizon from 1967 to 2003 the picture regarding UI-generosity is more mixed and depends on the replacement rates and on the entitlement and eligibility data. The weighted legal replacement rate implies no considerable change of UI-generosity when being combined with other legal and administrative data. If used together with the coverage, a decline of UI-generosity would be found. In general the gross replacement rates delivers similar results to those of the weighted legal replacement rate. The effective replacement rate combined with legal and administrative data implies a rise in generosity. Only if combined with the coverage alone a decline of UI-generosity can be identified. All these observations seem to favour an index on the basis either of the weighted legal or of the gross replacement rate. But the most consequent way to calculate the generosity of a UI-system would surely be to use the (weighted) legal replacement rate. Accordingly, we recommend either Index I or Index II as an alternative to the isolated use of replacement rates of any sort in order to capture UI-generosity.

The following subsection deals with a few thoughts on the overall usefulness of new composite measures like the ones we constructed here.

4.3 The usefulness of a new index

What can a new composite measure or a new index tell us? How can it be helpful? Three main points come to mind.

Firstly, compared to the replacement rate a composite measure is more precise in quantifying the overall generosity of a UI-system. Thus an index

is highly valuable per se. As stated throughout this paper, it seems inappropriate to identify generous UI-systems only by referring to the level of UI-benefits. Of course an index has problematic features of its own. For example opposite effects may cancel each other out, but this is more an argument in favour of than against an index. Additionally, the data may include the multiple count of the same incidence. For example the overall coverage is reduced if the duration of benefits of a claimant is exhausted. Unfortunately it appears impossible to solve the problem of these double counts. Finally some composite measures are strongly influenced by the cyclical behaviour of the economy, especially those measures including the coverage. But one can handle this problem by carefully interpreting the results. It is by no means an argument against the use of an index.

Secondly, an index allows us to judge the overall effect of concurrent and opposite changes to the UI-system.

Thirdly, macroeconomic studies using only pecuniary aspects of the design of UI-systems might either underestimate its effects or come to completely wrong conclusions. This statement is particularly important because many macroeconomic studies usually include an explanatory variable capturing the design of the UI-system. Whether one of the constructed indices might serve as a helpful substitute for reflecting UI-generosity in future research is relegated to another paper.

5 Conclusions

This paper picked up the argument, that it would be overly simple to capture the generosity of UI-systems merely by its pecuniary aspects. Though the level of benefits - or rather the level of the replacement rate - clearly plays an important role in shaping individual and collective behaviour, this is only a part of the story. Other aspects of the UI-system like the entitlement and the eligibility features have to be taken into account too. While this conclusion is theoretically well established, many empirical studies often still make use of the replacement rate as a proxy for UI-generosity. Apart from the fact that it is difficult to determine the appropriate replacement rate, this procedure risks leaving out important UI-properties. Taking the German UI-system

as an example we thus tried to construct extended composite measures of UI-generosity. Though all of them include replacement rates they deliver preferable results as they also comprise administrative data reflecting the entitlement and the eligibility features. Contrary to replacement rates nearly all indices show that the German UI-system has become more generous between 1986 and 2003. Therefore our original hypothesis is confirmed.

A Appendix: Data

Table 1: Replacement rates in Germany (1967-2003)
Sources: AVAVG, AFG and SGB III; own calculations.

Year	RR legal (1: normal rate)	RR legal (2: without children)	RR legal, arithmetic mean of RR1 & RR2	RR legal, weighted mean of RR1 & RR2	RR effective	RR gross
1967	0,705	0,705	0,705	0,7050	0,6236	0,4995
1968	0,705	0,705	0,705	0,7050	0,7018	0,5554
1969	0,665	0,665	0,665	0,6650	0,6766	0,5254
1970	0,625	0,625	0,625	0,6250	0,6283	0,4986
1971	0,625	0,625	0,625	0,6250	0,5926	0,4830
1972	0,625	0,625	0,625	0,6250	0,6470	0,5107
1973	0,625	0,625	0,625	0,6250	0,6753	0,5131
1974	0,625	0,625	0,625	0,6250	0,6791	0,5142
1975	0,680	0,680	0,680	0,6800	0,6864	0,5212
1976	0,680	0,680	0,680	0,6800	0,6624	0,4864
1977	0,680	0,680	0,680	0,6800	0,6262	0,4518
1978	0,680	0,680	0,680	0,6800	0,6381	0,4599
1979	0,680	0,680	0,680	0,6800	0,8239	0,5915
1980	0,680	0,680	0,680	0,6800	0,8447	0,5955
1981	0,680	0,680	0,680	0,6800	0,8612	0,6045
1982	0,680	0,680	0,680	0,6800	0,8558	0,5915
1983	0,680	0,680	0,680	0,6800	0,7247	0,4946
1984	0,680	0,630	0,655	0,6509	0,6948	0,4662
1985	0,680	0,630	0,655	0,6473	0,7400	0,4606
1986	0,680	0,630	0,655	0,6466	0,7421	0,4621
1987	0,680	0,630	0,655	0,6457	0,7606	0,4671
1988	0,680	0,630	0,655	0,6460	0,7684	0,4687
1989	0,680	0,630	0,655	0,6462	0,7807	0,4680
1990	0,680	0,630	0,655	0,6467	0,7301	0,4830
1991	0,680	0,630	0,655	0,6454	0,8151	0,4747
1992	0,680	0,630	0,655	0,6506	0,6420	0,3816
1993	0,680	0,630	0,655	0,6485	0,7318	0,4359
1994	0,670	0,600	0,635	0,6244	0,7799	0,4530
1995	0,670	0,600	0,635	0,6230	0,8728	0,4923
1996	0,670	0,600	0,635	0,6231	0,9034	0,5131
1997	0,670	0,600	0,635	0,6229	0,9004	0,4946
1998	0,670	0,600	0,635	0,6225	0,8581	0,4670
1999	0,670	0,600	0,635	0,6230	0,8455	0,4549
2000	0,670	0,600	0,635	0,6232	0,8475	0,4527
2001	0,670	0,600	0,635	0,6239	0,8419	0,5251
2002	0,670	0,600	0,635	0,6240	0,8188	0,5122
2003	0,670	0,600	0,635	0,6236	0,8130	0,4149

Table 2: Entitlement and eligibility in the German UI-system (1967-2003)
Sources: AVAVG, AFG and SGB III; own calculations.

Year	D/M	Quota of blocking periods	Quota of granted requests	Eligibility	Coverage
		Col.1	Col.2	$(1-Q_{bp}) \cdot Q_{gr} = (1-Col.1) \cdot Col.2$	
1967	0,429	0,0368	0,9490	0,9141	0,6865
1968	0,429	0,0320	0,9424	0,9122	0,6137
1969	0,433	0,0269	0,9358	0,9106	0,5985
1970	0,433	0,0194	0,9384	0,9202	0,6414
1971	0,433	0,0256	0,9305	0,9067	0,6279
1972	0,433	0,0282	0,9436	0,9170	0,6211
1973	0,433	0,0311	0,9007	0,8727	0,5271
1974	0,433	0,0334	0,9042	0,8741	0,5725
1975	0,433	0,0271	0,9435	0,9179	0,6401
1976	0,433	0,0323	0,9301	0,9000	0,5813
1977	0,433	0,0390	0,9152	0,8795	0,5411
1978	0,433	0,0441	0,9180	0,8776	0,5218
1979	0,433	0,0467	0,9245	0,8813	0,5153
1980	0,433	0,0471	0,9043	0,8617	0,5051
1981	0,433	0,0383	0,9176	0,8824	0,5383
1982	0,433	0,0251	0,9242	0,9010	0,4995
1983	0,289	0,0191	0,9415	0,9236	0,4482
1984	0,289	0,0193	0,9452	0,9269	0,3793
1985	0,289	0,0163	0,9459	0,9306	0,3626
1986	0,289	0,0166	0,9396	0,9239	0,3628
1987	0,361	0,0159	0,9451	0,9301	0,3736
1988	0,433	0,0144	0,9534	0,9397	0,4232
1989	0,433	0,0153	0,9184	0,9044	0,4371
1990	0,433	0,0191	0,9548	0,9365	0,4270
1991	0,433	0,0110	0,9247	0,9145	0,5370
1992	0,433	0,0122	0,9118	0,9007	0,5627
1993	0,433	0,0118	0,9306	0,9196	0,5488
1994	0,433	0,0106	0,9560	0,9459	0,5181
1995	0,433	0,0100	0,9325	0,9232	0,4922
1996	0,433	0,0090	0,9380	0,9295	0,5000
1997	0,433	0,0085	0,9713	0,9630	0,4900
1998	0,500	0,0103	0,9498	0,9400	0,4659
1999	0,500	0,0116	0,9763	0,9650	0,4468
2000	0,500	0,0118	0,9210	0,9101	0,4369
2001	0,500	0,0121	0,9198	0,9087	0,4480
2002	0,500	0,0113	0,8920	0,8819	0,4688
2003	0,500	0,0135	0,9102	0,8979	0,4626

Table 3: Composite measures of UI-generosity in Germany (1967-2003)

	Index I:	Index II:	Index III:	Index IV:	Index V:	Index VI:	Index VII:	Index VIII:	Index IX:	Index X:	Index XI:	Index XII:
	RR weighted	RR weighted	RR weighted	RR weighted	RR effective *	RR effective *	RR effective *	RR effective *	RR gross *	RR gross *	RR gross *	RR gross *
Year	* D/M	* D/M * EI.	* Cov.	* Cov. * D/M	D/M	D/M * EI.	Cov.	Cov. * D/M	D/M	D/M * EI.	Cov.	Cov. * D/M
1967	0.3021	0.2762	0.4840	0.2074	0.2673	0.2443	0.4281	0.1835	0.2141	0.1957	0.3429	0.1470
1968	0.3021	0.2756	0.4327	0.1854	0.3008	0.2744	0.4307	0.1846	0.2380	0.2171	0.3409	0.1461
1969	0.2882	0.2624	0.3980	0.1725	0.2932	0.2670	0.4049	0.1755	0.2277	0.2073	0.3144	0.1363
1970	0.2708	0.2492	0.4009	0.1737	0.2723	0.2505	0.4030	0.1746	0.2161	0.1988	0.3198	0.1386
1971	0.2708	0.2456	0.3925	0.1701	0.2568	0.2328	0.3721	0.1613	0.2093	0.1898	0.3033	0.1314
1972	0.2708	0.2483	0.3882	0.1682	0.2804	0.2571	0.4019	0.1741	0.2213	0.2029	0.3172	0.1375
1973	0.2708	0.2364	0.3295	0.1428	0.2926	0.2554	0.3560	0.1543	0.2224	0.1941	0.2705	0.1172
1974	0.2708	0.2367	0.3578	0.1551	0.2943	0.2572	0.3888	0.1685	0.2228	0.1948	0.2944	0.1276
1975	0.2947	0.2705	0.4353	0.1886	0.2974	0.2730	0.4394	0.1904	0.2259	0.2073	0.3336	0.1446
1976	0.2947	0.2652	0.3953	0.1713	0.2870	0.2584	0.3851	0.1669	0.2108	0.1897	0.2828	0.1225
1977	0.2947	0.2592	0.3679	0.1594	0.2713	0.2387	0.3388	0.1468	0.1958	0.1722	0.2445	0.1059
1978	0.2947	0.2586	0.3548	0.1538	0.2765	0.2426	0.3329	0.1443	0.1993	0.1749	0.2400	0.1040
1979	0.2947	0.2597	0.3504	0.1518	0.3570	0.3146	0.4245	0.1839	0.2563	0.2259	0.3048	0.1321
1980	0.2947	0.2539	0.3435	0.1488	0.3660	0.3154	0.4266	0.1849	0.2581	0.2224	0.3008	0.1303
1981	0.2947	0.2600	0.3660	0.1586	0.3732	0.3293	0.4636	0.2009	0.2619	0.2311	0.3254	0.1410
1982	0.2947	0.2655	0.3396	0.1472	0.3709	0.3342	0.4275	0.1852	0.2563	0.2309	0.2954	0.1280
1983	0.1964	0.1814	0.3047	0.0880	0.2094	0.1934	0.3248	0.0938	0.1429	0.1320	0.2217	0.0640
1984	0.1880	0.1743	0.2469	0.0713	0.2007	0.1860	0.2635	0.0761	0.1347	0.1248	0.1768	0.0511
1985	0.1870	0.1740	0.2347	0.0678	0.2138	0.1989	0.2683	0.0775	0.1330	0.1238	0.1670	0.0482
1986	0.1868	0.1726	0.2346	0.0678	0.2144	0.1981	0.2692	0.0778	0.1335	0.1233	0.1676	0.0484
1987	0.2332	0.2169	0.2412	0.0871	0.2747	0.2555	0.2842	0.1026	0.1687	0.1569	0.1745	0.0630
1988	0.2799	0.2631	0.2734	0.1185	0.3330	0.3129	0.3252	0.1409	0.2031	0.1909	0.1984	0.0860
1989	0.2800	0.2533	0.2825	0.1224	0.3383	0.3060	0.3413	0.1479	0.2028	0.1834	0.2046	0.0886
1990	0.2802	0.2624	0.2761	0.1196	0.3164	0.2963	0.3117	0.1351	0.2093	0.1960	0.2062	0.0894
1991	0.2797	0.2558	0.3466	0.1502	0.3532	0.3230	0.4378	0.1897	0.2057	0.1881	0.2549	0.1105
1992	0.2819	0.2539	0.3661	0.1586	0.2782	0.2506	0.3613	0.1565	0.1654	0.1489	0.2147	0.0930
1993	0.2810	0.2584	0.3559	0.1542	0.3171	0.2916	0.4016	0.1740	0.1889	0.1737	0.2392	0.1037
1994	0.2706	0.2559	0.3235	0.1402	0.3380	0.3197	0.4040	0.1751	0.1963	0.1857	0.2347	0.1017
1995	0.2700	0.2492	0.3067	0.1329	0.3782	0.3492	0.4296	0.1862	0.2133	0.1969	0.2423	0.1050
1996	0.2700	0.2510	0.3116	0.1350	0.3915	0.3639	0.4517	0.1957	0.2223	0.2067	0.2565	0.1112
1997	0.2699	0.2600	0.3052	0.1323	0.3902	0.3758	0.4412	0.1912	0.2143	0.2064	0.2423	0.1050
1998	0.3113	0.2926	0.2900	0.1450	0.4290	0.4033	0.3998	0.1999	0.2335	0.2195	0.2176	0.1088
1999	0.3115	0.3006	0.2784	0.1392	0.4227	0.4080	0.3778	0.1889	0.2274	0.2195	0.2032	0.1016
2000	0.3116	0.2836	0.2723	0.1361	0.4238	0.3856	0.3703	0.1851	0.2263	0.2060	0.1978	0.0989
2001	0.3120	0.2835	0.2795	0.1398	0.4210	0.3825	0.3772	0.1886	0.2255	0.2049	0.2021	0.1010
2002	0.3120	0.2751	0.2925	0.1463	0.4094	0.3611	0.3839	0.1919	0.2185	0.1927	0.2049	0.1024
2003	0.3118	0.2800	0.2884	0.1442	0.4065	0.3650	0.3761	0.1880	0.2074	0.1863	0.1919	0.0960

Table 4: Indices of UI-generosity in Germany (1967-2003); 1970=100

	Index I	Index II	Index III	Index IV	Index V	Index VI	Index VII	Index VIII	Index IX	Index X	Index XI	Index XII
Year	1970=100	1970=100	1970=100	1970=100	1970=100	1970=100	1970=100	1970=100	1970=100	1970=100	1970=100	1970=100
1967	111,56	110,82	120,73	119,40	98,16	97,51	106,23	105,06	99,07	98,41	107,21	106,03
1968	111,56	110,59	107,93	106,74	110,47	109,51	106,87	105,69	110,16	109,21	106,58	105,40
1969	106,40	105,29	99,28	99,28	107,68	106,56	100,47	100,47	105,37	104,27	98,31	98,31
1970	100,00	100,00	100,00	100,00	100,00	100,00	100,00	100,00	100,00	100,00	100,00	100,00
1971	100,00	98,53	97,90	97,90	94,32	92,93	92,33	92,33	96,87	95,45	94,84	94,84
1972	100,00	99,65	96,83	96,83	102,97	102,61	99,71	99,71	102,42	102,06	99,17	99,17
1973	100,00	94,84	82,18	82,18	107,48	101,94	88,33	88,33	102,91	97,60	84,57	84,57
1974	100,00	94,99	89,26	89,26	108,08	102,66	96,47	96,47	103,12	97,95	92,05	92,05
1975	108,80	108,53	108,57	108,57	109,25	108,98	109,02	109,02	104,53	104,27	104,31	104,31
1976	108,80	106,42	98,60	98,60	105,43	103,12	95,54	95,54	97,56	95,42	88,41	88,41
1977	108,80	103,99	91,78	91,78	99,66	95,26	84,07	84,07	90,62	86,61	76,44	76,44
1978	108,80	103,76	88,51	88,51	101,55	96,85	82,61	82,61	92,24	87,97	75,03	75,03
1979	108,80	104,20	87,40	87,40	131,12	125,57	105,33	105,33	118,62	113,60	95,29	95,29
1980	108,80	101,89	85,67	85,67	134,43	125,89	105,86	105,86	119,43	111,84	94,04	94,04
1981	108,80	104,34	91,30	91,30	137,06	131,44	115,02	115,02	121,23	116,25	101,73	101,73
1982	108,80	106,53	84,72	84,72	136,21	133,37	106,07	106,07	118,63	116,15	92,37	92,37
1983	72,53	72,80	76,02	50,68	76,89	77,17	80,58	53,72	66,13	66,37	69,30	46,20
1984	69,43	69,94	61,59	41,06	73,72	74,26	65,39	43,60	62,33	62,78	55,29	36,86
1985	69,04	69,82	58,54	39,03	78,52	79,40	66,57	44,38	61,58	62,27	52,21	34,80
1986	68,97	69,25	58,52	39,01	78,74	79,06	66,80	44,54	61,78	62,03	52,42	34,94
1987	86,09	87,02	60,18	50,15	100,88	101,97	70,52	58,76	78,07	78,91	54,57	45,48
1988	103,36	105,55	68,20	68,20	122,29	124,89	80,69	80,69	94,00	96,00	62,02	62,02
1989	103,39	101,62	70,46	70,46	124,25	122,12	84,68	84,68	93,85	92,24	63,96	63,96
1990	103,47	105,30	68,87	68,87	116,21	118,27	77,35	77,35	96,86	98,57	64,47	64,47
1991	103,27	102,63	86,46	86,46	129,74	128,94	108,62	108,62	95,20	94,61	79,71	79,71
1992	104,09	101,89	91,32	91,32	102,18	100,02	89,64	89,64	76,53	74,91	67,14	67,14
1993	103,76	103,70	88,78	88,78	116,48	116,41	99,65	99,65	87,43	87,37	74,80	74,80
1994	99,91	102,69	80,69	80,69	124,13	127,59	100,25	100,25	90,84	93,37	73,37	73,37
1995	99,68	100,00	76,49	76,49	138,91	139,36	106,60	106,60	98,72	99,04	75,76	75,76
1996	99,70	100,71	77,72	77,72	143,78	145,24	112,08	112,08	102,89	103,94	80,20	80,20
1997	99,67	104,31	76,14	76,14	143,31	149,98	109,47	109,47	99,18	103,80	75,76	75,76
1998	114,93	117,41	72,34	83,47	157,58	160,98	99,19	114,45	108,08	110,41	68,03	78,49
1999	115,01	120,61	69,43	80,11	155,27	162,84	93,74	108,16	105,26	110,39	63,54	73,32
2000	115,06	113,79	67,92	78,37	155,64	153,93	91,88	106,01	104,74	103,59	61,83	71,34
2001	115,18	113,74	69,73	80,45	154,61	152,68	93,60	107,99	104,38	103,07	63,19	72,91
2002	115,20	110,40	72,97	84,20	150,37	144,11	95,25	109,91	101,12	96,91	64,06	73,91
2003	115,12	112,33	71,95	83,02	149,31	145,69	93,31	107,67	96,00	93,68	60,00	69,23

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