RATIONAL POVERTY OR POOR RATIONALITY?
THE TAKE-UP OF SOCIAL ASSISTANCE BENEFITS

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In several countries social assistance dependence has been increasing since the 1980s. After surveying the theoretical and empirical take-up literature, this study presents estimates of recent rates of non take-up of social assistance benefits. Once methodological shortcomings of prior estimations are corrected, the results show that take-up has fallen recently and thus cannot explain the rising welfare receipt. Following theoretical predictions, the probability that a rational individual takes up social assistance increases with the expected benefit amount and duration, and falls with application cost and stigma. More than half of all households eligible for transfers under the German social assistance program did not claim their benefits.

1. Introduction

Recently the issue of benefit take-up in public transfer programs has received increasing attention in economic research (e.g. Duclos, 1995; Anderson and Meyer, 1997; Yaniv, 1997). At first sight, it appears counter to the predictions of economic theory that individuals would not collect benefits available to them. Yet, van Oorschot (1994) cites evidence of at least 20 percent non take-up rates in state transfer programs, and others point to even higher rates. The study of take-up behavior is driven by an interest in explaining this economic puzzle.

In addition, investigations of take-up address at least four important questions. First, rising take-up rates over time may explain part of the upsurge in welfare receipt, observed in numerous countries over the past decades (OECD, 1998a, 1998b). Second, if transfer programs are administered in a way which deters individuals from using them, the programs may fail to reach their objectives. In the case of poverty alleviation, this can have dramatic effects for the well-being of the poor. Third, if social assistance programs effectively eliminate poverty when transfers are received, then the rate of non take-up provides a relevant measure of post-transfer poverty. Fourth and from a different perspective, estimates of take-up rates are important information when calculating potential expenditure effects of policy reforms.

The international literature provides various theoretical modelling approaches for take-up behavior and has empirically investigated the role of economic incentives in the take-up decision for a number of transfer programs. Prior contributions on take-up in the German social assistance program only evaluated take-up rates at different points in time in a descriptive manner. This study extends the literature in four important ways: First, it is the first to empirically

test hypotheses *explaining* the puzzling non take-up behavior for Germany. Second, following Duclos (1995), who draws attention to measurement error in take-up studies, it improves on prior methods of calculating the non take-up rate. Several shortcomings of past take-up calculations are pointed out, and sensitivity analyses show that their effects are major. With the corrected methodology, the share of households not taking up their benefits is only half that found before. Third, while almost the entire literature on non take-up in the social assistance program is based on data from the 1960s and 1970s, this study applies more recent data from 1993. This data from the German Income and Expenditure Survey (EVS, *Einkommens- und Verbrauchsstichprobe*), is highly suitable because it provides precise information on household finances for over 40,000 households. Also, the 1993 EVS is the first to consider East German and foreign households. Finally, this paper provides a comprehensive survey of research on non take-up in general, and for the German social assistance program in particular.

In contrast to Anglosaxon terminology, in this study a household is considered to be poor if low income and wealth ownership render it eligible for social assistance benefits (detailed eligibility conditions are described below). German government language maintains that households, who receive social assistance transfers, are no longer poor, as their poverty is fought off through transfers. However, households remain in "hidden poverty" if they are eligible for social assistance benefits, but "hide" their poverty by not taking up social assistance. Thus it is "hidden poverty" that is of principal interest in this study.

The main findings are threefold: first, non take-up in the German income support program has increased to about 60 percent of the eligible households. Therefore the observed increase in welfare receipt reflects a real change in the underlying income distribution, rather than a mere adjustment in take-up behavior. Second, estimation results confirm the theoretically predicted impact of benefit amounts, of the expected duration of benefit payments, and of application costs and stigma effects on take-up decisions. Finally, transfer payments would increase by more than 16 percent, were all eligible households to take up their benefits.

The paper first reviews international and prior German contributions on take-up. It then briefly describes the institutional framework of the social assistance program in section 4. Next, the data and the procedure used to calculate take-up rates are discussed. Section 6 presents an empirical analysis of the determinants of non take-up and the paper concludes with a summary of the main findings and a discussion of policy implications in section 7.

2. Modelling Take-up Behavior

The determinants of take-up in transfer programs have been on the agenda of economic research for a while,[1] but an intense discussion of the subject took place only recently. The literature studies participation for various US and UK

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[1]For early studies see Moffitt (1983), or Ashenfelter (1983); for surveys Craig (1991), or van Oorschot (1991).

transfer programs: Blank and Ruggles (1996) look at take-up in US welfare programs; Anderson and Meyer (1997), Blank and Card (1991), and McCall (1995) focus on participation in the US unemployment insurance; Fry and Stark (1989) and Duclos (1995) investigate take-up in the UK Supplementary Benefit program, Atkinson (1989) reviews take-up of UK one-parent benefits and family income support, Kim and Mergoupis (1997) evaluate participation in the US food stamp program, and Blundell, Fry, and Walker (1988) review the case of the UK housing benefit program. While not all of these studies provide a theoretical model to derive their hypotheses, among those who do, static and dynamic approaches to describe the program participation decision can be distinguished.

Examples of a static approach are Moffitt (1983), Blundell *et al*. (1988), and Yaniv (1997). Yaniv (1997) lets utility depend positively on income and negatively on the number of weeks worked. Individuals choose the number of weeks to work, given that income can be received as a transfer. The optimality condition states that one should participate in the program until the marginal disutility of work equals the stigma adjusted effective benefit (SAEB). SAEB increases with benefits, and declines with the degree of discomfort and of work requirement in the welfare program. Based on this theory, Yaniv concludes that stigma might constitute a stronger deterrent to participation than a penalty for dishonest claiming.

In contrast to Yaniv, Moffitt (1983) and Blundell *et al*. (1988) present empirical tests of their models. Moffitt (1983) allows stigma to affect utility either as a participation factor, or as a factor which varies with the benefit amount. The model yields testable hypotheses on the effects of marginal income tax rates, of wages, hours worked, nonwage income, and benefit levels. Moffitt estimates a two equation model for leisure demand and program participation, and concludes that stigma is appropriately represented by a fixed factor of disutility.

In the model of Blundell *et al*. (1988) stigma effects and application costs are considered in an explicit cost function, which imposes a fixed stigma effect. The participation probability equals the probability that the utility difference when participating versus when not participating exceeds the application and stigma cost. It can be approximated by a linear combination of relevant factors, such as the benefit amount, prior income, and sociodemographic characteristics. While the authors cannot rigorously derive hypotheses from their theoretical model, they posit plausibly that the higher the benefit the higher the chance of compensating for the fixed stigma cost of participation. This reasoning is confirmed in their empirical analysis.

Anderson and Meyer (1997) extend the static models by considering the impact of the expected duration of benefit receipt in the participation decision. An individual will take up benefits if over the expected length of an unemployment spell the utility difference with and without benefits exceeds the cost of take-up. The utility difference is determined by the expected benefit duration and amount. A number of hypotheses are derived: higher benefits, lower take-up costs, and a longer benefit duration are expected to increase the probability of program participation. Anderson and Meyer test these predictions and find that a 10 percent increase in benefits would raise take-up by about 2 percentage points, and a 10 percent longer benefit duration would increase participation probabilities

by about one percentage point. The theoretical framework of Anderson and Meyer is adopted here to guide the empirical analysis.

3. The German Literature

In contrast to the international literature on take-up behavior, German studies provide mostly descriptive evidence on the magnitude, sociodemographic distribution, and potential explanations of non take-up. The contributions on "hidden poverty", i.e. non take-up of income support benefits, are surveyed by Adam (1977), Schulz (1989), and Neumann and Hertz (1998). Below I summarize the empirical results of studies that were based on nationally representative data (see Table 1).[2] Since these papers are based on different datasets, parts of the differences in findings are attributable to data availability and calculation methods. However, since the overall findings seem to agree across studies they may provide a valid indication of the developments.

Early results on poverty in 1970s Germany are presented by Kortmann (1978) and Klanberg (1979). Their calculations are based on the dataset most frequently applied in German poverty studies, the EVS (Income and Expenditure Survey). Kortmann (1978) finds an overall poverty rate of 0.7 percent for 1969. Klanberg (1979) evaluated the 1969 and 1973 EVS surveys and, depending on the calculation method, finds poverty rates between 1.1 and 5.1 percent for households in 1969 and between 1.6 and 4.6 percent in 1973.

An influential study was that of Transfer-Enquête-Kommission (1981), a government commission studying the impact of public transfers on household incomes. The commission based its estimates on the 1973 EVS, and concluded that of the 350,000 households who had pre-transfer incomes below the income support level, about one third lived in hidden poverty. It estimated that the amount by which those in hidden poverty remained below the minimum income (poverty gap) amounted to between 5 and 10 percent of the benefit. The three main reasons for non take-up of benefits were ignorance about the program, misconceptions about eligibility conditions, and fear of causing problems with family relations, who might have to reimburse the administration for their relatives' transfers.

Hauser, Cremer-Schäfer, and Nouvertné (1981) took advantage of three waves of EVS data and presented poverty rate calculations for 1963, 1969, and 1973. They found that the poverty rate declined between 1963 and 1969, but increased in 1973. The authors explain that the social assistance minimum income was particularly low in 1969,[3] which leaves fewer households with incomes below the minimum, and poverty rates artificially depressed. Hidden poverty decreased from about 60 percent of all poor households in 1963, to about 50 percent in the later years. It is particularly frequent among those out of the labor force, and among elderly single women. The authors show that hidden poor households fall on average 16 (13) percent short of the minimum income in 1969 (1973), exceeding the calculations of the Transfer-Enquête-Kommission (1981).

[2]Additional contributions are surveyed in Riphahn (1999).
[3]For a discussion of the determination of social assistance minimum income, see section 4.

TABLE 1

GERMAN STUDIES ON SOCIAL ASSISTANCE TAKE-UP

Author	Publication Year	Data Source	Data Year	Number of Poor Households[a]	Share in All Households	Number of Hidden Poor Households[a]	Share of Hidden All Poor Household
(1) Kortmann	1978	IMDAF (based on EVS)	1969	n.a.	0.7%	n.a	n.a.
(2) Klanberg	1979	EVS (Income and Expenditure Survey)	1969	69a: 237,000	69a: 1.1%	n.a.	n.a.
			1973	73a: 343,000	73a: 1.6%		
				73b: 100,000[b]	73b: 0.5%		
(3) Transfer-Enquête-Kommission	1981	EVS (Income and Expenditure Survey)	1973	350	1.6%	116.667	33%
(4) Hauser et al.	1981	EVS (Income and Expenditure Survey)	1963	63: 1,160,000	63: 5.8%	63: 709,000	63: 61%
			1969	69: 778,000	69: 3.6%	69: 352,000	69: 45%
			1973	73: 962,000	73: 4.4%	73: 457,000	73: 48%
(5) Hartmann	1985	Survey of 25,000 households	1979	1,144,000	5.0%	550,000	48%
(6) Hauser and Semrau	1990	EVS (Income and Expenditure Survey)	1983	n.a.	n.a.	n.a.	30%
(7) Neumann and Hertz	1998	German Socioeconomic Panel	1991	n.a.[c]	n.a.[c]	n.a.[c]	91: 58.7%
			1995				95: 52.3%

Notes:

[a]Households are considered poor if their income falls below that minimum determined by the income support program. They are in hidden poverty, if the[y] not claim income support benefits available to them.

[b]Klanberg distinguishes a net income concept from a "full income" concept. Figures based on the former are labelled a, the latter b.

[c]The calculations by Neumann and Hertz are in terms of individuals as opposed to households.

Hartmann's 1985 study is based on data from a 1979 survey of 25,000 households. His results confirm Hauser *et al.* (1981): about 5 percent of the population are poor, and 48 percent of these are in hidden poverty, suggesting that the situation changed little after 1973. Hartmann finds that the poor population consists mostly of elderly females and points to the concentration of the hidden poor in rural areas. Unfortunately, he provides no information as to how he calculated incomes and whether he considered wealth in determining eligibility. Similarly brief is the discussion provided in Hauser and Semrau (1990). The authors applied the 1983 EVS data, and found a non take-up rate of about 30 percent. This indicates a significant decline from the last measure of 48 percent, as provided by Hartmann (1985) for 1979.

Neumann and Hertz (1998) provide the latest study on non take-up using the 1991 and 1995 German Socioeconomic Panel (GSOEP) data. This is the first study to consider East German and foreign households. Two important methodological flaws in the study are that no corrections for wealth ownership are considered and that the income measure is not corrected for the education benefits: these benefits are provided to parents of young children since 1986 but are not counted in the social assistance eligibility determination. The authors calculate that about 3 million individuals live in hidden poverty, with the overall rate declining from 3.7 to 3.4 percent of the population between 1991 and 1994. The decline is due to a drop in East German rates of hidden poverty from 5.6 to 4.2 percent, while West German rates remained constant at 3.2 percent. Hidden poverty is much higher among foreign than native households. The average hidden poor West (East) German household fell about 18.3 (19.7) percent short of minimum income. The high non take-up figures for East Germany in 1991 may be due to the recent start of the administration there. Non take-up rates are at 59 and 52 percent of income support beneficiaries. Compared to Hauser and Semrau's figure of 30 percent for 1983, this represents a steep increase. I investigate below whether this increase can be confirmed using the 1993 EVS.

4. A Brief Introduction to the German Social Assistance Program

4.1. *General Features*

The German social assistance program consists of two parts, income support (*Hilfe zum Lebensunterhalt*) and support for special circumstances (*Hilfe in besonderen Lebenslagen*). The purpose of the income support system is to guarantee that every resident can lead a ''dignified'' life based on a socio-culturally determined minimum income. Generally, every individual with less than this minimum income is to be financially supported. Support for special circumstances is intended for individuals, who might be able to meet their subsistence needs, but who are unable to care for their special needs. The law lists 13 such circumstances with the most frequent being support for the handicapped, for long-term and health care.

In contrast to support for special circumstances the income support system typically uses standardized payments. Given the variety of needs covered by support for special circumstances, the benefits are individualized. Also, the means

tests regarding disposable income and property are more lenient in the case of support in special circumstances than for income support.

As of 1998 income support accounted for 46 percent and support in special circumstances for 54 percent of total expenditures. Real expenditures on income support grew by 29 percent between 1994 and 1998. Total expenditures for social assistance as a fraction of GDP increased from 0.5 percent in 1970 to about 1.5 percent in the 1990s. The number of West German income support recipients rose from 0.92 in 1980, to 1.8 in 1990, and 2.5 million in 1998, when 3.7 percent of the population were supported (2.7 percent in East Germany, cf. STBA, 1999).

4.2. *Benefits and Eligibility Conditions*

In the case of income support, four types of financial benefits are available: standard rate benefits, housing support, one-time payments, and supplementary benefits. The standard rate benefits are paid as fixed monthly amounts for each member of the household.[4] In 1998 the average standard rate for the household head was about DM 541. Age-adjusted, reduced rates are paid for each additional household member.[5] In addition to standard rate benefits, expenses for rent and heating are typically fully covered by income support. One-time payments are available for situations of special need, e.g. if the household has to move. Since certain groups of recipients incur expenditures above the average, supplementary benefits provide premia on top of the standard rates: recipients above age 65, disabled persons, and pregnant women receive another 20 percent of the standard rate, and for single parents or handicapped individuals premia of 40 or 60 percent of the standard rate are possible.[6]

In contrast to the income support program, benefits of support in special circumstances are not standardized. The law regulates each special situation separately, therefore we do not discuss these items in detail (see Schulte and Trenk-Hinterberger, 1986).

The eligibility for social assistance is determined as follows: first the mini-mum need of a community of need is calculated by adding up the four types of benefits for its members. If this need exceeds the community's incomes, the house-hold is in principle eligible for assistance.[7] Additionally it is checked whether the need can be met by other means, e.g. from wealth or property sale. While in general all property needs to be sold before social assistance benefits can be claimed, some exceptions are granted; e.g. a small home, in which the household

[4]The amounts are adjusted annually by the federal government. State governments typically modify these adjustments slightly to account for regional cost of living differences. For a review of the discussion on standard rate determination see Riphahn (1999).

[5]Another 50 percent of the standard rate is paid for children under age 7, another 65 percent for children up to age 14, 90 percent for those aged 15 through 18, and 80 percent for other adults in the household. The eligibility determination accounts for the household situation of the core family or "community of need" (*Bedarfsgemeinschaft*). Since this "community of need" is typically identical with the household, it is approximated here using the household structure, which is available in the data.

[6]Based on the regulations of German family law, adult children and parents of social assistance recipients have to repay their inlaws' benefits if their own financial situation allows it.

[7]Since 1986 the government pays "education benefits" to parents of young children. These ben-efits are not considered as income for the purposes of social assistance eligibility and have to be taken out of the income measure.

resides, does not have to be sold, particularly when the need appears to be temporary. An individual is not eligible for support if the need can be met out of the disposable income or property of a spouse or unmarried partner who lives in the same household.

The eligibility requirements for support in special circumstances are not as harsh.[8] The law specifies more generous earnings disregards, i.e. limits below which individuals and households will not be asked to utilize their incomes. The amount of the disregard varies with the type of special circumstance.

5. Data

5.1. *The EVS Data*

This study applies the EVS data of 1993, which, to my knowledge, has not been analyzed for this purpose before. There are important advantages to this dataset. (i) Using the same data as past researchers permits a comparison of findings, and an evaluation of changes over time. (ii) The EVS is focused on income and expenditure measures and therefore yields more precise information with less item-non-response than comparable datasets. (iii) The EVS gathers information for a large number of households. The data contain the response of 40,230 households (by comparison, the German Socioeconomic Panel covers 7,000 households).

The EVS data consists of a baseline interview (January 1, 1993), continuous annual data, and a conclusion interview (December 31, 1993) in which property and wealth information are gathered. EVS survey households continuously note major incomes and expenditures during the calendar year. During one month participants write down every expenditure in certain categories in great detail. Given the burden that the survey imposes on the respondents, between 60 and 70 percent of a randomly selected sample would refuse to participate (Euler, 1992). Therefore the survey is not representative and purposely selects its sample based on the distribution of certain household characteristics taken from the Mikrozensus of the preceding year.[9] High income households are excluded from the sample because they tend to be particularly reluctant to provide financial information (the cutoff in 1993 was at a monthly income of DM 35,000, about US $21,000 as of 1993). Individuals in institutions and those without a permanent home, are not surveyed. The 1993 survey was the first to consider foreign and East German households.

As in other studies, the problem of non-representative data is addressed through the application of sample weights. The sample weights provided with the EVS data are based on the Mikrozensus of the year preceding the EVS. The

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[8]As of 1998 individuals receiving income support could keep up to DM 2,500 in passbook savings, while those receiving e.g. support for integration of the handicapped, could keep savings of up to DM 4,500.

[9]The Mikrozensus is an obligatory annual representative survey of 1 percent of the German households. The considered household characteristics are age, labor force and marital status of the household head, household size, and household income (Euler, 1992). Typically EVS households receive a bonus of DM 100 after completing the final questionnaire, an amount too small to be a participation incentive or a payment for the inconveniences.

40,230 households observed in the EVS data are weighted to represent the 35.6 million actual German households as of 1993.

As no dataset provides a perfect reflection of reality, so also does the EVS leave one important point to be desired: since the income indicators are annual, the determination of transfer eligibility—which in reality is based on monthly information—loses precision, as month-by-month fluctuations around the eligibility threshold may be glossed over ''asymmetrically.'' While households with very high incomes in just a few months and insufficient funds over the rest of year are not considered eligible at all based on monthly averages, households with insufficient incomes in only a few months and barely enough income for the rest of year may be included among the eligibles. Thus the estimates conservatively err on the side of considering too few households eligible which might artificially reduce the calculated rates of poverty and benefit non take-up.

Similarly, it is a disadvantage that the data do not separate the recipients of income support from those receiving support in special circumstances. However, this would only bias the results, if those receiving support in special circumstances were poor, but did not receive income support, which is extremely unlikely.[10]

5.2. *Measuring Non Take-up*

To determine whether a household takes up available income support, first eligibility has to be established. As described above, eligibility requires that actual household net income falls short of the (household size adjusted) minimum income, and that property and financial wealth of eligible households remains below a household size adjusted maximum. Four figures must be calculated to determine eligibility: (i) actual household net income; (ii) household specific minimum income; (iii) actual household wealth; and (iv) household specific maximum wealth.

Most complex is the calculation of household specific minimum income (item ii). It consists of standard rate benefits, supplementary benefits, one time benefits, and the reimbursement of rent and heating expenditures. Standard rates are determined annually at the state level and adjust for regional cost of living differences. The age adjusted, state-specific standard rates are then summed up for all household members (cf. footnote 5).

Based on data availability, the following supplementary benefits are considered: (i) 20 percent for those above age 65; (ii) 40 percent for single parents with either one child under age 7, or two or three children under age 16; (iii) 60 percent for single parents with four or more children; and (iv) supplements of an ''appropriate amount'' for employed individuals.[11] This appears to be the first

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[10]If these individuals are not poor, they do not enter our sample of interest. If they are poor, they are highly likely to receive income support in addition to support in special circumstances as they are already in touch with the social assistance administration which determines the ''special circumstances benefits'' as a function of income. The fact that the exact type of their benefit cannot be determined will bias results only if they are hidden poor, which seems almost impossible in this case.

[11]In June of 1993 the regulation on supplementary benefits for employed income support recipients was modified. However, despite complicated calculation procedures this change made no difference for any given individual, leaving our calculations unaffected (for details see Bäcker and Hanesch, 1998).

time that this employment supplement is considered in a study on hidden poverty in Germany. Finally, an overall adjustment for one time benefits at 10 percent of the standard rate as well as rent and heating expenditures are added to yield the household specific minimum income (item ii).[12]

This minimum income then has to be compared to actual household net income (item i), which is provided directly in the data. However, this annual income figure includes benefits received from the social assistance program and from the education benefit program. Both amounts have to be deducted from household net income, before eligibility for income support benefits is determined (cf. footnote 7). After the correction for the labor force supplement, consideration of these deductions is the second important aspect in which our calculation procedure improves on the existing literature.

A third improvement consists of the comparison of household financial wealth (item iii) to the maximum permitted wealth (item iv), which was ignored in prior studies. Eligibility requires that (as of 1993) a household may possess no more than the sum of DM 2,500 for the head, DM 1,200 for a partner or spouse, and DM 500 for each child. The EVS conclusion interview investigates household wealth in detail.[13] Those households for which actual wealth exceeds the permissible level (item iv), are not eligible for income support benefits.

One imperfection in the calculation is that it does not account for the restrictive effects of property ownership on eligibility. However, the regulations on permissible home ownership are not sufficiently clear to impute their effect on individual households.[14] If we assume that property and financial wealth of households are highly correlated, then controlling for financial wealth will correct for much of the measurement error. Section 5.3 presents sensitivity tests for the individual improvements in our calculation of eligibility compared to those in prior studies.

5.3. *Descriptive Statistics*

Table 2 describes items (i) through (iv) used in the determination of income support eligibility. Poor, i.e. benefit eligible households clearly have lower incomes and financial wealth than the full sample. Interestingly, the hidden poor households, i.e. those who do not take up their benefits, appear to be slightly better off in terms of household net income than those who take up state transfers. The low minimum income and permissible wealth among poor households relates to their relatively small household size.

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[12]For renters the expenditure categories "rent" and "energy" were considered. For home owners, the EVS presents a "rental value of owned apartment" which was used as a conservative approximation of rent expenditures in these households. Clearly, the imputation of the rental value introduces measurement error into the calculation. If it overestimates the dwelling expenditures relative to the calculation procedures of the social assistance administration, the number of poor households will be overestimated for the group of home owners, and vice versa.

[13]The considered items describe: total sum of building society savings agreements, bonds, shares in mutual funds and stocks, savings accounts, other financial assets, and sum of checking account balances, which may be negative.

[14]While some home ownership is acceptable for income support recipients, other property holdings will be deemed too valuable. The determination of this issue is legally complex and is determined by factors such as household composition, value and size of the property, as well as the alternative local cost of renting apartments.

TABLE 2

TABLE 2

DESCRIPTIVE STATISTICS

Variable Description	Full Sample	All Poor Households	Hidden Poor Households
Household characteristics			
(i) Household net income	52,120	15,906	17,853
(in DM per year)	(35,774)	(9,438)	(9,530)
(ii) Minimum income	26,482	21,426	20,913
(in DM per year)	(12,701)	(10,341)	(10,922)
(iii) Actual wealth	40,609	−294	−603
(in DM)	(76,227)	(8,261)	(10,229)
(iv) Permissible wealth	3,545	3,205	3,127
(in DM)	(881)	(901)	(902)
Household size	2.27	2.06	1.86
	(1.24)	(1.42)	(1.35)
Single person household	0.33	0.50	0.58
	(0.47)	(0.50)	(0.49)
Single parent household	0.05	0.22	0.13
	(0.22)	(0.41)	(0.33)
Number of children under 16	0.45	0.65	0.48
	(0.85)	(1.08)	(1.02)
Number of children under 7	0.21	0.31	0.22
	(0.54)	(0.68)	(0.59)
Characteristics of household head			
Female	0.35	0.59	0.57
	(0.48)	(0.49)	(0.50)
Age	50.8	47.7	49.3
	(16.6)	(18.4)	(19.3)
Schooling: none or basic	0.43	0.56	0.54
	(0.49)	(0.50)	(0.50)
Schooling: medium (*Realschule*)	0.27	0.23	0.23
	(0.44)	(0.42)	(0.42)
Schooling: 12/13 years	0.30	0.22	0.23
	(0.46)	(0.41)	(0.42)
Vocational training: none	0.12	0.33	0.34
	(0.33)	(0.47)	(0.48)
Vocational training: apprenticeship	0.68	0.61	0.60
	(0.46)	(0.49)	(0.49)
Vocational training: university degree	0.20	0.07	0.06
	(0.40)	(0.25)	(0.23)
Nationality and residence			
Town < 20,000 inhabitants	0.35	0.33	0.37
	(0.48)	(0.47)	(0.48)
City > 100,000 inhabitants	0.35	0.42	0.38
	(0.48)	(0.49)	(0.49)
East German	0.23	0.14	0.17
	(0.42)	(0.34)	(0.37)
Foreign nationality	0.02	0.04	0.03
	(0.13)	(0.20)	(0.18)

Notes: Presented are the variable means with standard deviations in parentheses.

All statistics are weighted by EVS sample weights for the full sample.

Poor households are defined by a positive difference between the minimum household income calculated by social assistance rules and the actual net income available to the household (net of social assistance benefits), who also do not possess more than the maximum permissible wealth. *Hidden poor households* are those poor households who are not taking up their social assistance benefits.

Poor households are more frequent among single person and single parent households than in the overall sample. Their heads are typically female, slightly younger, and less educated than the sample average. Poor households are more likely to reside in large towns, more likely to be in West Germany and more likely to be of non German nationality. Given the rather small number of foreign household observations in our dataset (about 1.5 percent compared to a population share of almost 10 percent) and the sample weights that do not differentiate by nationality, the analysis by country of origin is not considered here.[15]

Three measures are applied to describe the extent and degree of hidden poverty: (i) the share of the hidden poor among the poor and among all households; (ii) the amount of income by which hidden poor households fall short of the minimum (poverty gap); and (iii) the share of this gap in minimum income (degree of poverty). Table 3 provides these indicators.

TABLE 3

SENSITIVITY OF THE HIDDEN POVERTY MEASURE TO VARIOUS ASSUMPTIONS

Scenario	Poverty Rate (in percent)	Hidden Poverty in percent of		Poverty Gap (in DM per month)	Degree of Poverty (in percent)
		Poor Households	All Households		
Base case	3.34	62.6	2.09	255.0	14.2
Specification tests					
1. No correction for education benefits	3.25	62.7	2.04	241.5	13.6
2. No correction for labor force participation	2.82	58.0	1.64	249.9	13.6
3. No wealth condition	7.36	76.8	5.65	305.0	14.4
4. No one-time benefits	2.97	59.3	1.76	247.7	13.6
5. No correction for social assistance income	2.86	72.3	2.09	255.0	14.2
6. 1 + 2 + 3 + 5	5.16	84.2	4.35	297.5	13.6

Notes: *Poverty Rate* describes the share of poor households in the total population in percent. *Hidden Poverty* describes the share of hidden poor households among poor households and in the total population (i.e. non take-up) in percent. *Poverty Gap* describes the difference between minimum and actual income for households in hidden poverty in DM, and the *Degree of Poverty* calculates the ratio of poverty gap to minimum income, in percent, again only for households in hidden poverty.

Scenario 6 applies restrictions 1, 2, 3, and 5 to generate measures along the procedures applied in past research, that generally did correct for one time benefits.

All statistics based on weighted data.

Prior to income support payments 3.34 percent of all households have incomes and wealth below the poverty limits as defined by the rules of the income support program. This rate shrinks to 2.09 percent once we take out those households who indicate receipt of income support.[16] This implies a non take-up rate

[15]I thank an anonymous referee for information on this aspect of the weighting scheme.

[16]These numbers seem to imply that only about 1.25 percent of all households receive income support benefits, which does not agree with the official aggregate figure of about 3 percent of the population and 2.6 percent of all German households in 1994. The reason for this deviation are those survey households, which—based on annual incomes—do not have a claim to social assistance, but which indicate that they received social assistance in 1993. These make up another 1.8 percent of all households in the weighted sample and when added to the 1.25 percent share explain the deviation.

of 62.6 percent, which is higher than those obtained for recent years: Hauser and Semrau (1990) mention non take-up of about 30 percent for 1983, and Neumann and Hertz (1998) found non take-up of 59 and 53 percent in 1991 and 1995.

To describe the effects of the calculation procedure on the results, Table 3 reports on sensitivity tests: omitting the deduction of education benefits from the available income has hardly an effect on the results. Clearly poverty gap and degree are reduced when these sources are not deducted from income (scenario 1 in Table 3), but the reduced household income in the base case has only a small effect on the overall poverty rate.

Omitting the employment related supplemental benefit (scenario 2) decreased the measure of overall and hidden poverty. In this case hidden poverty would amount to 58 instead of 62.6 percent of all poor households. We find a large effect of the ''no wealth condition'' in scenario 3. Without screening out households which are ineligible because they own too much wealth, we would have obtained an overall poverty rate of over 7.4 versus 3.34 percent now.[17] Omitting one time benefits from the minimum income calculation (scenario 4) reduces the share of poor households, because the calculated minimum income declines and more households pass the lowered limit. Scenario 5 shows the expected decrease in poverty rates following the correction for income support benefits in the calculation of actual incomes. The simulation presented in the last row of Table 3 shows that had we applied the procedures common to prior studies in this literature, the poverty rate would have been 5.16 percent instead of 3.34 percent, hidden poverty as a percentage of poor households would have been 84.2 percent instead of 62.6 percent, and hidden poverty as a percentage of all households would have amounted to 4.35 instead of 2.09 percent. Thus the improvement in calculation procedures has sizeable effects.

Whereas the poverty and take-up rates vary largely across scenarios, the average poverty gap and degree of poverty are remarkably stable. Hidden poor households on average forgo about DM 255 per month, i.e. about 14 percent (one seventh) of average minimum income.

Table 4 describes the frequency of hidden poverty, i.e. non take-up across household types. The first four rows depict non take-up rates by households' rank in the distribution of unmet needs, i.e. the absolute poverty gap and the relative poverty degree. Clearly, non take-up declines with expected benefits and is highest among households with small claims. This confirms the hypotheses derived in the models of Anderson and Meyer (1997), or Blundell *et al.* (1988).

East Germans appear to have higher non take-up rates than West Germans. The univariate frequencies confirm urban/rural differences in take-up rates (Hartmann, 1985). The effects of human capital are inconclusive: Non take-up is low among those with low schooling and with high vocational degrees. The non take-up rate seems to increase over the life cycle of the household head. Single parent households have very low and households without children have high rates of non take-up. The joint effects of these factors are analyzed next.

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[17]Kortmann (1978, p. 132) cites a finding of Klanberg that about 20 percent of poor households have wealth beyond the maximum disregard. In our data that share is much higher.

TABLE 4

Non Take-up Rates Among Poor Households by Characteristics

Characteristic	Rate of Non Take-up	Characteristic	Rate of Non Take-up
All poor households	62.58		
First quartile of poverty gap	89.08	First quartile: poverty degree	88.29
Second quartile of poverty gap	79.68	Second quartile: poverty degree	80.80
Third quartile of poverty gap	60.35	Third quartile: poverty degree	64.95
Fourth quartile of poverty gap	24.01	Fourth quartile: poverty degree	18.27
West German households	60.26	Household head age 20–29	66.79
East German households	77.38	Household head age 30–39	53.52
Towns <20,000 inhabitants	70.29	Household head age 40–49	55.37
Cities >100,000 inhabitants	55.87	Household head age 50–59	63.57
Household owns home	87.96	Household head age 60–69	68.11
Household rents home	57.54	Household head age >69	72.92
Head schooling: none/basic	60.86	Single person household	73.80
Head schooling: medium	63.73	Single parent household	36.03
Head schooling: 12/13 years	65.82	Married couple, no children	73.86
Head vocational training: none	65.89	Married couple, with children	57.19
Head vocational training:		Cohabiting couple, no children	81.92
apprenticeship	61.87	Cohabiting couple, with children	50.11
Head vocational training:		No child under 16	72.11
university degree	52.82	One child under 16	41.97
Household head female	60.54	Two children under 16	45.15
Household head male	65.49	Three children under 16	42.40
		Four children under 16	43.00

Note: All statistics based on weighted data.

6. Empirical Tests of Hypotheses

6.1. *The Specification*

This section extends the analysis of non take-up to a multivariate framework, to test the hypotheses derived in the theoretical models described above. The reason for not claiming benefits is generally modelled in form of an implied cost, such that benefit take-up is more likely if benefits are high, if the duration of benefit receipt is long, and if take-up costs are low (Anderson and Meyer, 1997). Based on these arguments we test the effects of benefit amount, and of variables which approximate benefit duration, application cost, and stigma.

To evaluate the effects of benefit entitlement the poverty gap and poverty degree measures are applied. A number of variables can be used to approximate benefit duration: if, for example, the head of a household is retired and retirement benefits are insufficient, the need for public support will be permanent. Therefore we control for whether the household head reached retirement age (age 65) and expect a positive effect on the take-up probability. Information on handicap status would also be a suitable proxy variable, but unfortunately the data do not provide this indicator. Further, we use the presence of young children under age 7 in single parent households as a duration indicator. These households are likely to depend on outside support for another few years, during which employment opportunities of the single parent are limited due to child care obligation. Finally, we use variables describing the earnings potential of a household to approximate the duration for which the household will need income support. If the head of a

household is well educated, it is hypothesized that benefit receipt may be short term and therefore take-up can be expected to be lower. The same reasoning applies when we compare households who own and rent an apartment: if owner households have on average a higher earnings potential they may need assistance for shorter periods and will be less likely to take up benefits.[18]

To operationalize application cost we consider whether a household is of German or foreign nationality, assuming that it is more difficult for a foreign household to obtain the necessary information. This suggests that foreign households are less likely to take up benefits.

The amount of stigma a household feels is approximated by four measures. First, age and sex of the household head is included: social norms may render a situation in which an individual is not able to provide for one's household a more stigmatizing event for men than for women. This may also vary across birth cohorts. Second, living in a small community will make it harder to shield the information on income support dependence from the public. Therefore we expect households in small towns to be less likely to take up benefits. The opposite effect holds for bigger cities, where anonymity may protect the applicant from stigmatization. Third, we know that social assistance in former East Germany, where individuals not only had the right but also the obligation to work, had a negative connotation (Neumann and Hertz, 1998). Thus stigma effects may be higher in East than in West Germany, yielding lower take-up there. Finally, the presence of children may be a motivation for parents to ensure that the means of subsistence are provided. While adults might save and make do with fewer resources if it concerned only themselves, take-up is hypothesized go up if children are around.

Descriptive statistics on the explanatory variables used in the regression analysis are provided in the second column of Table 5. The relevant sample is the group of households who are poor prior to income support transfers. The dependent variable indicates non take-up.

6.2. *Estimation Results*

A probit estimator is applied to the dichotomous dependent variable. Estimation results on three alternative specifications are presented in columns (1) through (3) of Table 5. The first specification controls for the absolute amount of monthly benefits (the poverty gap), the second controls for the relative degree of poverty, and the final specification reestimates the second, adding controls for state fixed effects. Fixed effects might be relevant, because states regulate some features of the social assistance programs, e.g. the standard rates. Insofar as these features or other state level effects such as macroeconomic and labor market conditions induce different behaviors, these effects are controlled for by the fixed effects.

The estimation results broadly confirm our hypotheses: higher benefit claims significantly reduce the probability of non take-up, confirming the findings of the

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[18]Additionally, footnote 12 pointed to the potential measurement error in the imputed value of home ownership. By considering the indicator for home ownership in the specification, the potentially biasing effect of the measurement problem can be controlled for.

TABLE 5

ESTIMATION RESULTS: PROBIT ESTIMATION OF HIDDEN POVERTY DETERMINANTS

	Mean (Std. Dev.)	(1)	(2)	(3)	Marg. Effects
Hidden poverty (dependent var., 0/1)	0.601 (0.490)	–	–	–	
Benefit effect					
Poverty gap	481.4 (498.0)	−0.0017** (0.0002)	–	–	–
Poverty degree	0.255 (0.248)	–	−3.699** (0.313)	−3.756** (0.313)	−1.810
Duration effect					
Head retirement age (0/1)	0.172 (0.378)	0.157 (0.237)	0.272 (0.237)	0.239 (0.241)	0.090
Single parent (0/1)	0.238 (0.426)	−0.122 (0.189)	−0.409* (0.189)	−0.417* (0.195)	−0.163
Single parent and child under 7 (0/1)	0.124 (0.330)	−0.214 (0.289)	0.210 (0.289)	−0.154 (0.292)	−0.058
Head: schooling basic or none (0/1)	0.517 (0.500)	−0.408** (0.150)	−0.536** (0.162)	−0.540** (0.165)	−0.205
Head: schooling medium (0/1)	0.231 (0.422)	−0.242 (0.172)	−0.355† (0.182)	−0.328† (0.185)	−0.128
Own home (0/1)	0.179 (0.383)	1.539** (0.238)	1.023** (0.185)	1.059** (0.185)	0.341
Application cost and stigma effect					
Foreign household (0/1)	0.049 (0.217)	0.075 (0.241)	0.127 (0.242)	0.070 (0.252)	0.027
Head: female (0/1)	0.543 (0.498)	−0.139 (0.130)	−0.012 (0.138)	−0.030 (0.138)	−0.012
Head: age	44.9 (16.7)	−0.011† (0.006)	−0.014* (0.006)	−0.015* (0.006)	−0.006
Town < 20,000 inhabitants (0/1)	0.303 (0.460)	0.212 (0.157)	0.237* (0.150)	0.276* (0.167)	0.104
City > 100,000 inhabitants (0/1)	0.460 (0.499)	−0.179 (0.138)	−0.098 (0.142)	0.002 (0.156)	0.001
Household in East Germany (0/1)	0.117 (0.322)	0.183 (0.192)	0.265 (0.196)	−0.151 (0.536)	−0.059
Children < age 7 in household (0/1)	0.255 (0.248)	−0.236 (0.189)	−0.632** (0.182)	−0.646** (0.187)	−0.252
Constant	–	1.761** (0.264)	2.135** (0.288)	2.183** (0.302)	–
State fixed effects	–	no	no	yes	–
Number of observations	766	766	766	766	–
Log likelihood	–	−351.08	−332.69	−325.51	–

Notes: Columns (1) through (3) describe alternative specifications. Presented are coefficient estimates with standard errors in parentheses. **, *, † indicate statistical significance at the 1, 5, and 10 percent level respectively. The standard errors are Huber–White corrected. The estimation is performed on unweighted data.

Specification (3) controls for state fixed effects which are not presented.

The last column describes the marginal effects of the covariates based on specification (3). For the continuous explanatory variables (poverty degree and age of household head) the effect is calculated as the change in the probability of non take-up following an infinitesimal change in the explanatory variable; for the remaining dichotomous measures the marginal effect describes the discrete change in the probability after the indicator variable takes on the values 0 or 1.

international literature (cf. Blundell *et al.*, 1988; Anderson and Meyer, 1997). Since for inter-household comparison a relative benefit measure (e.g. the poverty degree) appears more appropriate than the absolute benefit amount (i.e. the poverty gap) the poverty degree is preferred for the final specification in column (3).[19] Simulation experiments (not presented) yield that a 10 percent increase in either benefit measure yields a decline in the probability of non take-up of about two percentage points or 3 percent, which is the same magnitude Anderson and Meyer (1997) found in their study, and a rather modest effect.

With the exception of the insignificant ''head of retirement age'' effect, all measures approximating the duration effect on benefit take-up confirm our hypotheses, several at high levels of statistical significance. With respect to having a household head of retirement age we need to keep in mind that the specification also controls for the age of the head as a stigma variable. There it has the expected negative sign, indicating that older heads have lower rates of non take-up, which confirms the duration hypothesis.[20] However, the finding that take-up rates increase with age is surprising, as in prior studies the (descriptive) evidence showed that take-up declines with age (e.g. Hauser *et al.*, 1981). In fact this is what the descriptive statistics in Table 4 suggested. Apparently the negative relationship between age and take-up, which is usually ascribed to older individuals' fear of straining family relations, disappears as soon as other covariates are controlled for.[21]

As expected, single parents and particularly those with young children have significantly lower rates of non take-up; even though the estimated interaction effect is not significant, the three measures of single parent, children under age 7, and the interaction term are jointly highly significant. Having a household head with little or average schooling reduces the rate of non take-up. The suggested interpretation is that relative to households with highly educated heads these households cannot expect to improve their economic situation fast, as their human capital is low. Since therefore the expected duration of transfer receipt is longer, the probability of non take-up declines.[22]

Finally, home ownership, interpreted as the outcome of a superior earnings profile, is significantly correlated with a much higher rate of benefit non take-up.[23] Among the dichotomous indicators, home ownership has the largest marginal effect, increasing the probability of non take-up by 34.1 percent (see Table 5). Foreign nationality proxies the effect of application costs. It has the expected

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[19]An estimation which controlled for both resulted in an insignificant coefficient estimate for the poverty gap, and a highly significant estimate with a nearly unchanged coefficient for the poverty degree.

[20]In test runs, which did not control for age, the ''head of retirement age'' variable had a negative effect on non take-up, confirming the duration hypotheses, even though it was statistically insignificant.

[21]When the age variable is considered as the only covariate in the model, the coefficient is positive, but very small and statistically insignificant.

[22]In prior estimations we additionally controlled for the effect of vocational training. However, even when no further human capital indicators were considered, these variables did not significantly improve the explanatory power of the model. Therefore they are excluded in the final specification.

[23]The interpretation may either follow that of human capital variables, or one may consider the significant home ownership effect as an indicator of overestimated imputed rental values of owned homes.

positive effect on non take-up. Though it is imprecisely estimated, this suggests that foreign households are less likely to take up benefits: once other characteristics are controlled for, non take-up is more frequent among foreign than among observationally equivalent German households, which confirms the results of Neumann and Hertz (1998). However, the possibly non-representative nature of the foreign respondents in our sample must be kept in mind.

The expected difference in take-up behavior between male and female household heads is not borne out by the data. The community size effects confirm that individuals living in large cities tend to have (insignificantly) higher take-up rates, and those residing in small towns are significantly less likely to take up their benefits. East German households do not differ significantly from their western counterparts. The hypothesis on the significant impact of the presence of children on household take-up behavior is impressively confirmed.

7. Summary and Conclusions

This paper investigates the phenomenon of non take-up of public transfers: its theoretical explanation, its extent and determinants using the example of the German social assistance program. German studies identified a downward trend in non take-up from 61 percent of all eligible households in 1963, to 48 percent in 1979, and 30 percent in 1990. Recently, Neumann and Hertz (1998) found an increase in non take-up rates to 59 and 52 percent for 1991 and 1995. They applied data from the German Socioeconomic Panel, which had not been used for this type of analysis before. Their conclusions are confirmed here based on information from a large 1993 dataset with more than 40,000 households: about 63 percent of all poor households did not take up the income support available to them. This amounts to about 2 percent of all German households (700,000). If every household were to take up available benefits, expenditures on income support for noninstitutionalized households in 1993 would have increased by 16.8 percent.[24] Since take-up rates have fallen in recent years, the secular increase in income support dependence cannot be due to a change in take-up behavior.

The model first presented by Anderson and Meyer (1997) shows that the cost of applying for income support benefits, the amount and duration of the expected benefits, as well as factors affecting individually perceived stigmas are likely determinants of benefit non take-up. A test of these hypotheses yields generally confirming evidence: a rise in expected benefits by 20 percent would increase the rate of benefit take-up by about 6 percent. Expectation of a long benefit duration increases the tendency to take up the available provisions. Individuals, who by living in a small community might be subject to stigmatization, are also less likely to claim the transfers.

While these estimates test the microeconomic conditions for income support take-up, they cannot explain the shifts in take-up rates over time. The sensitivity

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[24]A total of 700,000 households with an average claim of DM 272 per month generate an additional annual expenditure of DM 2.28 billion, which is compared to actual gross expenditures of DM 13.6 billion on general income support for noninstitutionalized households in 1993 (cf. Neuhäuser, 1995). Relating it to the gross income support expenditures for all households, yields an increase by 12.7 percent.

analyses presented above show that the findings on hidden poverty vary depending on the applied calculation procedures. In fact, not correcting for prior methodological shortcomings would have yielded a rate of hidden poor households in the population twice that found here. It would therefore be a worthwhile future research endeavour, to calculate non take-up by homogenous procedures for all available EVS datasets over the past three decades. Once reliable estimates of the trend in take-up rates are available, its determinants can be evaluated.

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