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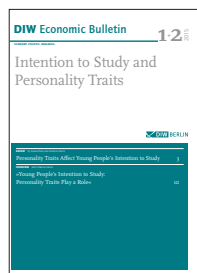
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Income and Assets of Care Households in Germany

By Johannes Geyer

In 2013, some 2.6 million people received long-term care benefits. The number of benefit recipients has risen by 45 percent since 1998. A good 70 percent of benefit recipients, roughly 1.7 million people, are cared for at home and nearly 30 percent in a nursing facility. There are also a significant number of individuals who are dependent on care but not to such an extent that they are entitled to benefits from their care insurance. Instead, they are almost all cared for at home. Long-term care is usually a major burden on the individuals and households concerned. Alongside health-related restrictions, there are also additional costs due to medical expenses and care. At the same time, related caregivers often earn less, since they are forced to reduce working hours to take on care commitments. The present study shows that care households have similar incomes to households without care recipients. However, transfer payments for care recipients make up a relatively high share of total income. Moreover, care recipients' assets are far lower than those of individuals without care needs. Care recipients living alone have particularly limited financial resources, and they represent more than 40 percent of all care households.

Care recipients and their relatives are faced with some serious challenges. In addition to the health-related restrictions of the care recipients, the caregivers themselves may also develop health problems due to the stress of caregiving tasks, added to which financial burdens also frequently need to be addressed. These can arise either from privately financed care services or from the caregiving household member suffering a fall in income,¹ since caregivers are often restricted in their ability to engage in gainful employment in order to reconcile care and career.²

Long-term care insurance is limited to contributions toward the cost of care or benefits in kind, and must be complemented by informal and/or privately financed formal care (see box). As the duration of care increases, the question as to whether current household income is sufficient to cover these costs or whether they have to be financed by private assets becomes increasingly important. Survey data show that care recipients have a strong preference for care in a domestic setting.³ If this cannot be guaranteed, many care recipients have only one option: to be looked after in a nursing home. The cost of nursing home care is greater than that of home care, for both those affected and for the public long-term care insurance. The share of individuals receiving supplementary social welfare among recipients of nursing home care is correspondingly high. Around 42 percent of those receiving nursing home care also receive social welfare. In contrast, the share of recipients of home care receiving social welfare in 2013 was approximately 7.5 percent.

¹ See also J. Geyer and E. Schulz, "Who cares? Die Bedeutung der informellen Pflege durch Erwerbstätige in Deutschland," *DIW Wochenbericht*, no. 81 (14) (2014): 294–301.

² M. B. Lilly, A. Laporte, and P. C. Coyte, "Labor Market Work and Home Care's Unpaid Caregivers: A Systematic Review of Labor Force Participation Rates, Predictors of Labor Market Withdrawal, and Hours of Work," *Milbank Quarterly*, no. 85 (4) (2007): 641–690.

³ A. Kuhlmei, D. Dräger, M. Winter, and E. Beikirch, "COMPASS – Versichertenbefragung zu Erwartungen und Wünschen an eine qualitativ gute Pflege," *Informationsdienst altersfragen*, no. 37 (4) (2010): 4–11.

Box

Care Insurance Payments

Long-term care insurance covers part of the risk of requiring care services. The care recipient concept underlying an entitlement to payments is codified in section 14 of the Book XI of the German Social Security Code (*SGB XI*). According to this definition, the entitlement to long-term care exists when an individual is restricted (probably for at least six months) from carrying out activities of daily living (ADL; basic care) in the areas of personal hygiene, nutrition, mobility, and instrumental activities of daily living (IADL; household assistance). In addition, long-term care benefits depend on the level of care required. According to section 15 of *SGB XI*, there are three levels of care:

- Care Level I: in need of significant care. These individuals need help at least once a day with at least two day-to-day activities, and household assistance several times a week.
- Care Level II: highly dependent on care. These individuals need help at least three times a day with basic care, and household assistance several times a week.
- Care Level III: requiring the highest level of care. These individuals require round the clock help with basic care, including at night, and household assistance several times a week.

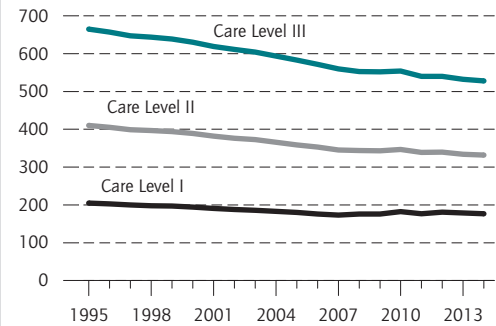
Moreover, since 2008, care recipients have also been entitled to support payments from long-term care insurance if they are not eligible for Care Level I but are nevertheless severely restricted in carrying out everyday tasks (section 45b of *SGB XI*).

Eligible recipients receiving home care can choose between benefits in kind and care allowance or a combination of both. In addition to providing home care, long-term care insurance also provides payments for partial or full nursing home care. In addition, long-term care insurance supports care households with a variety of other services. Benefits are also provided when caregivers are temporarily unable to provide domestic care (e.g., due to vacation or illness), or to make age-appropriate alterations to their homes.¹

Long-term care insurance benefits were not been adjusted between 1995 and July 2008, leading to a decline in purchasing power. In 1995 prices, the care allowance in Care Level I fell by 13 percent from 205 euros to 180 euros (see Figure 1). This decrease is even more pronounced in the higher care-

¹ An overview of the structure and benefits of long-term care insurance can be found in E. Schulz, "The Long-Term Care System in Germany," *DIW Discussion Papers* 1093 (2010). Further information from the Federal Ministry for Health about current entitlements can be found here: http://www.bmg.bund.de/fileadmin/dateien/Downloads/Statistiken/Pflegeversicherung/Pflegeversicherung_im_Ueberblick_2015.pdf

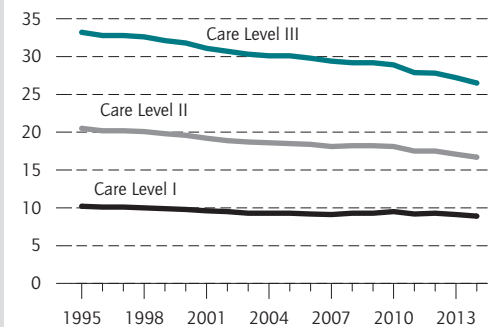
Figure 1

Care allowance rates by level of care
 In euro per month in prices of 1995


Source: Calculations of DIW Berlin

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Figure 2

Relative share of care allowance with respect to average gross earnings by level of care
 In percent


Source: SOEPv30, Calculations of DIW Berlin

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needs categories, reaching almost 20 percent in Care Level III. In 1995, benefits in Care Level III were one-third of average gross salaries, while in 2014 they were down to almost one-quarter (see Figure 2).² Incremental benefit increases have been in place since 2008 to help counteract this trend.

² For nursing home services, in particular, it is assumed that support payments from long-term care insurance have fallen in value. See H. Rothgang, D. Kulik, R. Müller, R. Unger, "BARMER GEK Pflegereport 2009," *Schriftenreihe zur Gesundheitsanalyse, Schwäbisch Gmünd* (2009): 33–35.

The present study examines the income and asset situation of care recipients in private⁴ households based on the Socio-Economic Panel (SOEP)⁵ study. The SOEP also contains data on individuals requiring assistance and care who are not receiving long-term care insurance benefits. In the present report, the term *care recipient* includes also individuals who fall into this category. Households containing one or more care recipients are referred to here as *care households*.

Current income is important in determining how much scope care recipients in households have to live independently. Among other things, their income will also determine what options they have for purchasing private care services or making alterations to their apartments or houses to meet care needs. Since 1995, individuals with significant care needs have been able to draw supplemental long-term care insurance benefits. In the analysis of the income situations of these households, the individual incomes of care recipients aged 60 or more are compared with those of the remainder of the population of the same age. In addition, the incomes of households with one care recipient aged 60 or more were compared with those of other households in which the head of the household is 60 years or older. A similar procedure is used to analyze their asset situations.

Long-Term Care Insurance: An Important Source of Income for Care Recipients

Around 73 percent of the care recipients in households considered here receive long-term care benefits, a good 51 percent of whom receive monetary benefits, i.e., care allowance (see Table 1).⁶ On average, care recipients receive just over 5,000 euros per year which indicates the need for a relatively high level of care as defined by the statutory long-term care insurance. Just over 70 percent of care recipients draw a pension. This share is roughly the same as that for individuals of retirement age not receiving care, who receive 4,000 euros more in pension benefits per year than care-receiving pensioners. One reason for this difference is that care recipients are more frequently female and women receive lower pensions than men. This is also why the share of indi-

Table 1

Annual income¹ of care recipients and elderly without care requirements in 2012

Type of income	Share of income type		Income amount in euro	
	Care recipients	Other persons	Care recipients	Other persons
Long-term care insurance benefits	72.7			
Care allowance	51.4		5,086	
Pension	71.1	74.6	10,978	14,870
Survivor's pension	23.6	14.8	8,914	8,950
Private transfers	2.5	0.4	2,251	4,982
Rent and lease	8.2	13.2	9,800	11,913
Housing allowance	3.6	1.2	1,010	1,217
Social welfare	2.3	0.7	2,650	3,426
Capital income	49.9	71.9	806	1,056
Employment	0.7	18.6	13,559	26,390

1 The sample consists of people aged 60 older. Figures were calculated using population weights.

Source: SOEPv30, Calculations of DIW Berlin

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Many care recipients draw survivor's pensions.

viduals receiving widow's pensions among care recipients is higher than in the comparison group, although the average payment is similar at just under 9,000 euros per year. Other types of income, such as capital income, are less common among care recipients. Overall, the shares of other public transfers (housing benefit, social welfare) are slightly higher than in the reference group where, as expected, earned income plays a greater role at almost 20 percent.

Income of Care Households Not Below Average— Transfers Claimed More Frequently

The following analysis of household income differentiates between the following sources of income: employment, capital income, rental value of owner-occupied housing,⁷ private transfers, public transfers, and government or private pensions. In 2012, the average weighted⁸ net income of care households was just over 20,000 euros (see Table 2), making it approximately as high as

⁴ There are no survey data on the income and asset situations of individuals living in institutions or in relatives' households.

⁵ SOEP is a representative longitudinal survey of individual households conducted annually in West Germany since 1984 and in eastern Germany since 1990; see G. G. Wagner, J. Göbel, P. Krause, R. Pischner, and I. Sieber, "The Socio-Economic Panel (SOEP) study: Multidisziplinäres Haushaltspanel und Kohortenstudie für Deutschland – Eine Einführung (für neue Datennutzer) mit einem Ausblick (für erfahrene Anwender)," *ASa Wirtschafts- und Sozial-statistisches Archiv* vol. 2, no. 4 (2008): 301–328.

⁶ At this point, we cannot determine whether individuals receiving care assistance also receive non-monetary care benefits, i.e., a combination of benefits.

⁷ The inclusion of the rental value of owner-occupied housing takes account of the fact that homeowners do not have to pay rent from disposable income, thus improving the comparison of disposable household income between tenants and homeowners (see J. R. Frick and M. M. Grabka, "Imputed Rent and Income Inequality: A Decomposition Analysis for Great Britain, West Germany and the U.S.," *Review of Income and Wealth*, no. 49 (4) (2003): 513–537).

⁸ To account for differences in income due to household size, all income components were weighted by the square root of household size; see: http://www.diw.de/de/diw_01.c.411605.de/presse/diw_glossar/aequivalenzeinkommen.html.

Table 2

Annual income of care households and other households¹ in 2012

Type of income	Share of income type		Income amount ² in euro	
	Care households	Other households	Care households	Other households
Net income			20,787	21,674
Pension (public)	97.1	88.5	13,980	16,277
Pension (private)	18.1	30.2	22,229	25,262
Private transfers	3.0	1.1	2,188	5,594
Imputed rent	58.8	58.4	3,385	3,595
Public transfers	70.9	12.7	4,991	4,465
Capital income	68.8	79.7	1,550	1,895
Employment	18.1	30.2	22,229	25,262

¹ The sample consists of households with a care recipient aged 60 or more and other households in which the head of the household is 60 years or older. Figures were calculated using population weights.

² We account for differences in households size (see Footnote 8).

Source: SOEPv30, calculations of DIW Berlin

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The equivalized net income of care households is almost as high as in other households, although there are considerable differences in composition.

in other households in which the head of the household is aged 60 or over, 30 percent of whom received income from employment. Among care households this share was as low as 18 percent; average earned income in care households was also lower than that of the reference group. Similarly, care households earned capital income less frequently than households with no care recipients and average incomes were lower.

In contrast, care households are above-average recipients of transfers. Three percent of care households received private transfers as opposed to one percent in the

reference group, and around 71 percent of care households received public transfers compared to just under 13 percent in the reference group. Long-term care insurance transfers are likely to play an important role here. With lower payment amounts, the uptake of government or private pensions was more frequent among care households than other households. Overall, the average weighted household income per year was similar in both groups at around 21,000 euros, although there were considerable differences in composition.⁹

In the SOEP, care households were also asked about the extent of regular care costs. Around half of all care households stated that the care situation incurred regular costs, the monthly burden being around 400 euros or a good 20 percent of average disposable household income.¹⁰

Care Recipients Less Often Wealthy

The analysis of the asset situation included monetary assets, private insurance, tangible assets, owner-occupied real estate assets, other real estate, and liabilities.

⁹ These findings are consistent with assessments of previous SOEP waves which also show that the risk of poverty in care households is no higher than among the general population and that care insurance benefits significantly reduce the risk of poverty. Conversely, it was found that care recipients who were not entitled to care insurance benefits were at greater risk of poverty (see J. Geyer, T. Korfhage, and E. Schulz, "Versorgungsformen in Deutschland – Untersuchungen zu den Einflussfaktoren auf die Nachfrage spezifischer Versorgungsleistungen bei Hilfe- und Pflegebedarf. Evaluation – Bericht-erstattung Pflegequalität," Final report for the Zentrum für die Qualität in der Pflege, <http://www.zqp.de/index.php?pn=press&id=402>).

¹⁰ See also Geyer et al., loc. cit.

Table 3

Individual net wealth of care recipients and elderly without care requirements in 2012

	Total		Women		Men	
	Care recipient	Other persons	Care recipient	Other persons	Care recipient	Other persons
Net wealth¹						
Mean	93,713	119,405	83,633	106,104	110,479	133,207
Median	9,000	60,000	5,500	50,000	14,540	74,000
Share (in %)						
Positive net wealth	62.0	80.4	57.6	78.7	69.3	82.1
no wealth	33.8	17.4	37.9	19.7	27.0	15.0
negative net wealth	4.2	2.2	4.5	1.5	3.7	2.9

¹ Net wealth without business assets. The sample consists of people aged 60 older. Figures were calculated using population weights.

Source: SOEPv30, calculations of DIW Berlin

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Care recipients have less wealth than persons without care requirements.

ties.¹¹ In 2012, net assets of care recipients totaled almost 94,000 euros (see Table 3), a good 20 per cent lower than the average net assets of other individuals aged 60 years or more. The values in the middle of the distribution clearly show that assets are very unevenly distributed.¹² The median among care recipients is 9,000 euros compared to 60,000 euros in the remainder of the population aged 60 or above. A considerable share of care recipients, approximately 38 percent, has no positive net assets or debt. In the reference group, this share is less than 20 percent. Similar to the income situation, these findings may also be considerably skewed by the fact that care recipients are more frequently female and, at the same time, women also have fewer assets than men. In percentage terms, the difference in assets between female care recipients and female non-care recipients is greater than the corresponding difference in men.

Nearly half of all female care recipients have negative assets or no assets at all. The median is approximately 5,500 euros. Female non-care recipients have median assets of 50,000 euros and only 20 percent have no positive net assets. The median of assets owned by male

care recipients is nearly 15,000 euros and 30 percent have no net assets or are in debt. While the financial situation of male care recipients is, on average, considerably better than for female care recipients, it is much worse than the remainder of men aged 60 years or over; the latter have median assets of 74,000 euros.

Lowest Assets among Care Recipients Living Alone

A large proportion of care recipients, 43 percent, live alone (see Table 4). Nearly 48 percent live in two-person households and ten percent in households with more than two people. Care recipients who live alone are frequently female and widowed while those living in couple households are more frequently male. Overall, the median assets of care households are just over 35,000 euros, while the reference households have a median of just over 86,000 euros. Around one-third of care households have no positive net assets, while among other households this figure is 20 percent. In care households, however, there are more people living alone and in the reference group households more frequently consist of three or more individuals (25 percent). As a result, household assets are also considered according to household size. Care recipients living alone have the weakest asset position with median assets of 3,000 euros which is well below the level of the reference group (35,000). There is little difference in the amount of assets in larger households, but care households still have fewer assets than the reference group.

¹¹ In principle, business assets could also be taken into account. However, only a very small proportion of the sample has such assets, but among those that do, the amounts are extremely high. As a result, these assets were not included in our analysis.

¹² For more details about the term "median," see the DIW Glossary (in German only) http://www.diw.de/de/diw_01.c.413351.de/presse/diw_glossar/medianeinkommen.html

Table 4

Net wealth of care households and other households in 2012

	Total		Nach Haushaltsgröße (Zahl der Personen)					
			Pflegehaushalte			Sonstige Haushalte		
	Care households	Other households	1	2	3+	1	2	3+
Net wealth¹								
Mean	140,799	176,211	82,594	157,728	208,127	115,915	223,042	251,886
Median	35,160	86,600	3,000	90,500	172,203	35,000	141,000	195,000
Share (in %)								
Positive net wealth	67.2	79.9	55.4	72.9	75.5	74.6	84.5	81.5
no wealth	28.4	17.6	39.2	23.5	20.0	22.7	13.1	16.1
negative net wealth	4.4	2.5	5.4	3.6	4.5	2.6	2.4	2.4
Share (in %)			42.6	47.8	9.7	48.7	46.2	5.1

¹ Net wealth without business assets. The sample consists of households with a care recipient aged 60 or more and other households in which the head of the household is 60 years or older. Figures were calculated using population weights.

Source: SOEPv30, calculations of DIW Berlin.

Conclusion

Care situations present care recipients and their relatives with multiple challenges. In order to live independently and be cared for at home as long as possible, care recipients and their relatives need a network for organizing informal care and the financial resources to bear the care costs and, if necessary, to compensate for the carer's loss of income. For those with greater care needs, long-term care insurance plays an especially important role in providing vital assistance in the form of contributions to supplement income or direct non-monetary care. Care insurance does not, however, cover all the care needs and, in the past, has only rarely been adjusted in line with current prices and wages. Despite steps to introduce dynamization for care benefits—a measure which has been in planning since 2008—their real value has declined considerably since their introduction in 1995. This loss is weakest in Care Level I (Pflegestufe I) which the majority of benefit recipients of long-term care receive.

On the whole, care households earn similar incomes to households with no care recipients. However, they re-

ceive transfer benefits more frequently. The dependence of long-term care recipients on pension and long-term care insurance payments poses risks for future generations since the pension level will fall in future as a result of pension reforms introduced in recent years.¹³

In terms of their private asset situations, care recipients and care households differ considerably from the rest of the population. In particular, care recipients who live alone, the majority of whom are female, have comparatively few reserve assets. From a social policy perspective, this is problematic because care recipients living alone are at greater risk of being transferred to a nursing home. First, this form of care is generally not preferred by care recipients and, second, nursing home care is relatively expensive compared to in-home care—both for social security and for care recipients, who have to cover a large portion of the costs themselves.

13 J. Geyer and V. Steiner, "Künftige Altersrenten in Deutschland: relative Stabilität im Westen, starker Rückgang im Osten," DIW Wochenbericht, no. 77 (11) (2010): 2-11.

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SIX QUESTIONS TO JOHANNES GEYER

»Long-term home care recipients are often women who live alone«

1. Dr. Geyer, how many people in Germany claim benefits from long-term care insurance and what development has been observed in recent years? Currently, approximately 2.6 million people receive benefits from long-term care insurance funds and this figure has increased by over 40 percent since 1998. Around two-thirds of benefit recipients are cared for at home and one-third in a nursing facility.
2. How can this increase be accounted for? This development is primarily a result of demographic change, or more precisely, an aging population. The risk of requiring long-term care increases from around the age of 80 in particular; in the 80-85 age group, the share of people requiring long-term care is 20 percent; and beyond this age, the risk of long-term care increases sharply. The older population has grown in recent years and will also continue to increase in future.
3. What income do those requiring long-term home care have? The weighted income of care households is slightly over 20,000 euros a year and the corresponding figure for households with no long-term care recipients is approximately the same. What differs is the composition of this income. Households with care recipients are far more dependent on public transfer payments, while other households tend to earn their income from employment. Moreover, care households are less likely to have capital income, and, those that do have fewer assets than comparable households without care recipients.
4. What are the reasons behind these discrepancies in assets? We cannot fully explain the difference in assets between the households with and without long-term care needs. It is likely that the care situation is so cost-intensive that some of the household assets have already been used for care-related expenses. We know that those requiring care are older than the remainder of the population. In other words, we are already at a later point in our lives by the time we require care. Another important factor here is that many of those in need of care are women living alone. Women typically have fewer assets than men and, if they live alone in old age, they have probably already consumed much of what they had. This is one possible reason for the major discrepancies in assets between these two groups.
5. Long-term care insurance only provides contributions toward the actual cost of care. To what extent can the affected households finance the remaining costs from their current income? Here, we must draw a distinction. The proportion of people being cared for at home who actually need to claim financial assistance from long-term care insurance is under eight percent. This figure is not particularly low but it is still considerably lower than the percentage for residents in nursing homes whose financial contributions are much higher and where, relatively speaking, contributions from long-term care insurance are lower. Here, the rate of claims for supplementary social welfare benefits has increased to more than 40 percent.
6. Do benefits from long-term care insurance need to be adjusted to bring them in line with the cost situation and price trends? In order to maintain the level of social services, long-term care insurance must be in line with current prices and wages, otherwise the contributions will increasingly lose their real value. This is the situation we found ourselves in from 1995 to 2008. Since 2008, benefits have been increased gradually. From 2015 onward, we will see a dynamization of benefits. In specific terms, this means that every three years rates will have to be adjusted in line with inflation. It might have made more sense to anticipate the price trend. Although now, three years later, benefits have been adjusted to take account of price increases, they continue to lag behind price trends. Whatever the case, this is a better approach than keeping benefits at constant levels, although these regulations are likely to undergo further reforms, too.

Interview by Erich Wittenberg

Significant Statistical Uncertainty over Share of High Net Worth Households

By Christian Westermeier and Markus M. Grabka

The analyses of wealth inequality based on survey data usually suffer from undercoverage of the upper percentiles of the very wealthy. Yet given this group's substantial share of total net worth, it is of particular relevance. As no tax data are available in Germany, the largest fortunes can only be simulated using "rich lists." For example, combining the *Forbes* list, with its approximately 50 German US dollar billionaires, with survey data results in an increased aggregate total net worth for all households in Germany in 2012 of between one-third and 50 percent, depending on the scenario. Moreover, the share of the richest one percent of the population (about 400,000 households) rises from approximately one-fifth to one-third. After reassessment, the richest ten percent of the population's share of total net worth is estimated to be between 64 and 74 percent, depending on the scenario. These reassessments are characterized by a high degree of uncertainty which eventually can only be reduced by improving the base data.

Typically, individuals' net worth, the sum of all their assets, is far more unequally distributed than current income. This is evident, for instance, from the fact that only a relatively small proportion of the population accounts for a considerable share of the entire net worth.¹ Given that the exact figures on the percentage of the richer social strata and the precise distribution of wealth provide an important basis for tax and social policies, there is significant public interest in the status quo and developments in wealth distribution in Germany. However, the existing data bases have a significant flaw in terms of representing high net worth individuals sufficiently (see Box 1 on the general problem of measuring wealth). Using econometric estimation techniques, the aim of the present study is to simulate the upper margin of wealth distribution to obtain an improved data base for the entire distribution of wealth as well as key distribution ratios.

The findings presented in this report are based on a research project funded by the Hans Böckler Foundation to analyze wealth distribution in Germany² and extended analyses by DIW Berlin on describing the amount, composition, and distribution of private net worth from 2002 to 2012.³ The empirical basis is the data from the Socio-Economic Panel (SOEP) longitudinal study of households collected by DIW Berlin together with the field-work organization *Infratest Sozialforschung*.⁴ Every five years since 2002, a series of focused interviews have been conducted to gather data on net worth (2002, 2007,

¹ See M. M. Grabka and C. Westermeier, "Persistently High Wealth Inequality in Germany," DIW Economic Bulletin, no. 6 (2014).

² "Vermögen in Deutschland- Status-quo-Analysen und Perspektiven," Project number: S-2012-610-4; project management: Markus M. Grabka.

³ See Grabka and Westermeier, "Persistently High Wealth Inequality."

⁴ The SOEP is a representative longitudinal study of households conducted every year since 1984 in western Germany and since 1990 in eastern Germany, see G. G. Wagner, J. Göbel, P. Krause, R. Pischner, and I. Sieber, "Das Sozio-oekonomische Panel (SOEP): Multidisziplinäres Haushaltspanel und Kohortenstudie für Deutschland – Eine Einführung (für neue Datennutzer) mit einem Ausblick (für erfahrene Anwender)," *ASA Wirtschafts- und Sozialstatistisches Archiv*, vol. 2, no. 4 (2008): 301–328.

Table 1

Raw Distribution of Household Net Worth¹ in SOEP and PHF

In euros

	<i>PHF (2010/11)</i>		<i>SOEP (2012)</i>	
Mean	195,170		154,380	
Median	51,358		46,680	
90th percentile	442,320		380,740	
95th percentile	661,240		563,100	
99th percentile	1,929,344		1,349,640	
Share of top one percent of total net worth in percent	24.3		18.2	
Share of top five percent of total net worth in percent	45.7		39.0	
Maximum value in millions	76.3		45.5	
Total net worth in trillions	7.742		6.278	
<i>Base data:</i>				
Number of households with net worth of ...	Unweighted	Projection for the entire population	Unweighted	Projection for the entire population
Over 500,000 euro	654	3,261,599	862	2,516,656
Over 1,000,000 euro	246	1,051,254	270	708,424
Over 3,000,000 euro	45	239,407	42	108,366
Total of all households	3,565	39,672,983	10,711	40,657,024

¹ Households (excluding the institutional population).

Sources: SOEPv29; "Private Haushalte und ihre Finanzen" study.

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High net worth individuals tend to be underrepresented in survey random samples.

and 2012). Although the SOEP study establishes available assets on a personal level, the data are then aggregated on the household level for the purpose of analysis. This dataset is thus comparable with the panel study "Households and their finances" (*Private Haushalte und ihre Finanzen, PHF*) conducted by the Deutsche Bundesbank in 2010/2011,⁵ which comprised a slightly more comprehensive portfolio of questions on current net worth.⁶

Multimillionaires Underreported in Population Surveys

In 2012, according to the SOEP survey, total net worth in Germany amounted to just under 6.3 trillion euros (see Table 1), approximately 1.5 trillion euros less than the figures reported in the *PHF* for 2010/2011. However, the comparability of the two surveys is limited, not only due to the different times of the surveys and the components of individual net worth taken as parameters (see also Box 1), but also since the *PHF* study made particular efforts to identify high net worth households and include them

disproportionately in interviews.⁷ This approach leads to enhanced estimates on the upper margin of wealth distribution and, in addition, after projections to the entire population, shows a higher aggregate of net worth.

The improved coverage of wealthy households has virtually no effect on the median⁸ of the household net worth. In the *PHF* study, this value was equivalent to approximately 51,000 euros, while it was just under 47,000 in the SOEP study. However, the mean of the distribution of wealth is sensitive to the improved representation of wealthy households. While the SOEP reports a figure of almost 155,000 euros per household in 2012 (not adjusted for inflation), the *PHF* records an equivalent amount of 195,000 euros, a good 40,000 euros more. Moreover, looking at the percentiles on the upper margin of distribution, it becomes evident that the estimates from the *PHF* lead to significantly higher figures. Here, for instance, the cut-off for the 95th percentile (661,000 euros) is slightly over 100,000 euros above

⁵ U. von Kalkreuth and H. Hermann, "Vermögen und Finanzen privater Haushalte in Deutschland: Ergebnisse der Bundesbankstudie," Deutsche Bundesbank Monthly Reports (6) (2013): 25–51.

⁶ HFCN, "The Eurosystem Household Finance and Consumption Survey: Methodological report for the first wave," ECB Statistical Paper Series, no. 1 (2013).

⁷ In the *PHF*, this oversampling of high-income households is based on a regional oversampling in areas with high income and high net worth households. Although the SOEP also utilizes oversampling from the 2002 survey year, this only comprises households with an above-average income. However, rather than there being a perfect correlation between income and net worth, high-income households may also only have a low net worth.

⁸ The median is the value separating the wealthier 50 percent of the population from the poorer half and is robust against distortions on the upper distribution margin.

Box 1

Data Sources on the Distribution of Wealth

Not only does the national accounts approach face a number of methodological and statistical problems, but so too does the analysis of the distribution of wealth based on microdata representative of the population.

Neither approach takes into account—as is common the world over—the entitlements to statutory pension insurance. Accumulated pension-related claims are converted into personal earning points which do not unequivocally indicate social security assets and therefore are hardly directly ascertainable in a survey; this applies equally to occupational pension entitlements. However, since the majority of the working population is subject to compulsory pension insurance or has pension-related claims, for example, in the form of training or childrearing periods, social security assets in the statutory pension scheme in particular can be assumed to represent the most frequent component in household net worth. Pension insurance data analyses have shown that 91 percent of men and 87 percent of women aged 65 or over have statutory pension entitlements. (In eastern Germany, the corresponding figures are even higher at 99 percent.)

Other components of net worth are also commonly not addressed in population surveys since they are particularly difficult to record, such as household effects, including the value of vehicles. Neither of these two asset components flow into the concept of net worth underlying this analysis. Thus, due to these limitations, in comparison to the national accounts approach, the net worth in these figures is, all other things being equal, underestimated.

In population surveys, assets are usually recorded at the household level. In this context, the SOEP methodology has a special feature since it records the individual assets of each respondent aged 17 or over. In contrast to only recording household assets, this approach can show differences within households and partnerships while it still allows the individual worth to be added to obtain a result for a particular household. Hence, the present analyses refer to the net worth of households. The data collection methods do not gather information on the assets held by children, so this, too, is underestimated.

A comparison of aggregated assets based on the SOEP and the sectoral and overall economic balance sheets of the German Federal Statistical Office (FSO) is complicated by a number of differences in distinctions and definitions. The following reasons for this are germane in this context. First, the FSO categorizes households together with private non-profit organizations. Second, in addition to durable consumer goods, other types of assets are also included which are not recorded in the SOEP, including cash, the value of livestock and crops, equipment, intangible fixed assets, claims against private health insurance companies, commercial loans, and commercial holdings in residential buildings. Third, the SOEP generally records the current market value of real estate while the FSO calculates its replacement value. However, market value differs significantly from the replacement value of portfolio properties. As a result, the SOEP's 2002 calculation for net worth on this basis totaled almost 90 percent of the balance sheet figure arrived at by the FSO, but it was only 64 percent

SOEP estimates; in the 99th percentile, this gap has already increased to almost 580,000 euros (approximately 1.9 million in comparison to 1.35 million).

Accordingly, the *PHF* records a higher number of households with a net worth of one million euros. The extrapolated *PHF* figure amounts to just over one million households, while the SOEP equivalent is around 700,000 households.⁹ In the *PHF*, the estimated num-

ber of households with a net worth of more than three million euros is also almost twice as high.

The improved data on wealthy households is important at the upper margin of the wealth distribution. Despite both surveys making particular efforts to recruit wealthy households for interviews, both random samples here share the problem that they hardly include any multi-millionaires with a net worth of over five million euros and no billionaires at all.¹⁰

⁹ In the SOEP, the last additional random sample to improve the statistical force of wealthy households was taken in 2002. Here, high-income households were overrepresented in the random sample. Due to "panel mortality," the number of households and individuals in the panel decrease over time because of respondents' refusal to participate or demographic processes, such as migration or death. As a result, solely in terms of the upper margin of wealth distribution, this sample's cover is constantly eroded. On this, see J. Schupp, J. R. Frick, J. Goebel, M. M. Grabka, O. Groh-Samberg, and G. G. Wagner, "Zur

verbesserten Erfassung von Haushaltsnettoeinkommen und Vermögen in Haushaltssurveys," in *Reichtum und Vermögen – Zur gesellschaftlichen Bedeutung der Reichtums- und Vermögensforschung*, eds. T. Drüyen, W. Lauterbach, and M. Grundmann (Wiesbaden: 2009), 85–96.

¹⁰ The Federal Statistical Office's cross-sectional Income and Consumption Survey (Einkommens- und Verbrauchsstichprobe, EVS) is conducted every five years to establish the net worth situation of private households. However, the

in 2012. In the case of residential buildings, the quantitatively most important asset component, the coverage rate fell from 129 percent in 2002 to slightly under 103 percent in 2012. Here, liabilities are recorded at 73 percent. With aggregate gross monetary assets at 33 percent, the SOEP, as in all other wealth surveys worldwide, has significantly underestimated their value.

A comparison with the wealth survey conducted by the German Federal Bank in 2010/11 (*Private Haushalte und ihre Finanzen, PHF*) shows that the SOEP slightly underestimated per capita net worth at 86,000 euros, compared to the PHF's 95,000 euros. Here, it should also be taken into account that the PHF conducts a far more detailed survey of the asset situation, for example, also explicitly taking into account the value of vehicles.

Since 2002, the SOEP has included a subsample of "high-income households" in a concerted effort to counter the widespread problem in population surveys of not having a statistically significant subgroup of higher incomes and assets. In the context of high inequality in personal wealth distribution, this subsample and the sufficiently large number of wealthy households in the SOEP is especially important. In particular, the relationship between income and wealth distribution for all groups, and above all for the group of high-income earners, can also be shown in greater detail, since assets, asset income, and savings depend to a large extent on disposable income. Nevertheless, despite this dedicated subsample, the problem remains that surveys such as the SOEP effectively do not contain top high net worth individuals. This applies in particular to billionaires as well as multi-millionaires with a net worth in the triple-digits million range. As a result, the true

extent of wealth inequality is underestimated. Germany presently has no available external statistics, for instance, wealth tax statistics, to validate this potential underestimation.

The need to provide fair market value of assets also presents such surveys with a fundamental problem. Estimating fair market value in a survey is difficult, especially when the object was inherited or purchased a long time ago and respondents do not have sufficient knowledge of the current market. As is well known, valuing business assets is also particularly difficult. In contrast to regular income, asset values can be very volatile and this further complicates their evaluation. Aside from the overall sensitivity of this issue, this in turn increasingly results in refusals to answer asset-related questions.

Not only does the SOEP conduct extensive consistency checks on the individual data, but it also uses multiple imputations to replace all missing asset values. Due to the use of longitudinal data from the repeated wealth surveys in 2002, 2007, and 2012, the quality of the imputation is better than in the case of a single survey.

After extrapolation and weighting factors are applied, the SOEP microdata underlying these analyses give a representative picture of the sample in households and thus allow conclusions to be drawn about the entire population. Members of the population in institutions (for example, in nursing homes) were not taken into account. The weighting factors correct differences in the designs of the various SOEP samples as well as the participation behavior of respondents after the first interview. The framework data of the microcensus is adjusted to increase its compatibility with official statistics.

In the research presented here, external information on billionaires in Germany from the *Forbes* list was included to correct the continuing underrepresentation of high net worth individuals.¹¹ Unfortunately, with few exact details provided on how these lists are compiled, the estimates are likely to be highly imprecise. On the basis of

the assumptions explained below, the upper margin of the distribution of wealth follows a Pareto distribution which can then be used to simulate the upper margin of the survey data (see Box 2). To estimate the Pareto distribution parameters, the data at the SOEP survey's top level have been taken together with information from the US *Forbes* magazine on German billionaires and, using this information, the top section in the SOEP survey's distribution of wealth has been simulated. On the basis of the resulting distribution, more precise estimates can be calculated to show, for example, the shares of the top one or top 0.1 percent of the distribution of wealth.

Since applying the Pareto method to simulate the top net worth households results in estimates with a considerable degree of uncertainty, two scenarios, each with an upper and lower limit, are presented for all three years

EVS uses a cut-off threshold so that households above a certain income threshold are excluded from the sample. In 2008, this point was set at a net household income of 18,000 euros. Since income and net worth are related, this resulted in the undercoverage especially of high-income households in the EVS.

¹¹ Alternatively, information on high net worth individuals in Germany is available in the manager magazin "rich list." However, since the less detailed estimates in the triple-digit million area result in heaping effects, it was decided to use the *Forbes* list. On this basis, an estimate of the top high net worth individuals for 2007 using the SOEP data has already been published; S. Bach, M. Beznoska, and V. Steiner, "A Wealth Tax on the Rich to Bring Down Public Debt? Revenue and Distributional Effects of a Capital Levy in Germany," *Fiscal Studies*, vol. 35 (1) (2014): 67–89.

Table 2

German Citizens in the *Forbes* List of Dollar Billionaires

In billion euros

	2002	2007	2010	2012
Number of entries	34	55	53	55
Total net worth	159.8	185.4	159.5	188.7
Maximum	30.9	15.1	17.2	19.1
Net worth of households from FSO national accounts	6,409	7,709	8,621	9,286
Proportion of high net worth individuals and FSO aggregate in percent	2.49	2.40	1.85	2.03

Sources: Destatis 2013; *Forbes* magazine, *The World's Billionaires* List.

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According to *Forbes* magazine, 55 German US dollar billionaires had a net worth of nearly 190 billion euros in 2012.

of the SOEP surveys (2002, 2007, and 2012). These reflect the maximum and minimum values based on different assumptions regarding the parameters of the Pareto distribution itself.

In 2013, According to *Forbes* Magazine, Net Worth of Germany's Dollar Billionaires Amounted to Just Under 230 Billion

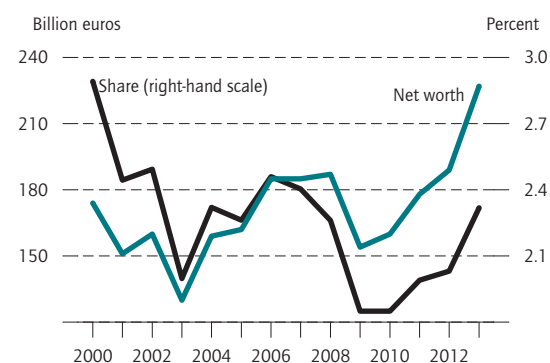
Forbes magazine¹² compiles a global list of billionaires with a personal net worth of over one billion dollars. In 2002, approximately 34 individuals (or families) in Germany fell into this category (see Table 2), this number rose to 55 by 2007, and then remained on this level until 2012.¹³ Figure 1 shows the total net worth of Germany's US dollar billionaires according to the *Forbes* list, as well as the share of the total assets of those dollar billionaires and the net wealth of households in Germany¹⁴ for 2000 to 2013. Since 2001, this proportion has varied between approximately 1.8 and 2.5 percent, and thus only changed minimally. The total net worth of German dollar billionaires reached its absolute minimum of just under 130 billion euros in 2003 after the new economy bubble burst. The maximum over this period was slightly under 230 billion euros, recorded in 2013. Hence, according to the *Forbes* list, the total net

¹² www.forbes.com/billionaires/list/#tab:overall_country:Germany, accessed November 3, 2014.

¹³ The reduction of the maximum shown in Table 2 from 30.9 billion euros to 15.1 billion euros from 2002 to 2007 is due to the *Forbes* list separating Karl and Theodor Albrecht's assets into two individual households after 2002.

¹⁴ The data on the development of total net worth are taken from the national accounts, Federal Statistical Office, *Sektorale und Gesamtwirtschaftliche Vermögensbilanzen 1991–2012* (2013).

Figure 1

Net Worth of German Citizens in the *Forbes* List and Their Share of Total Net Worth¹

¹ Net worth in the *Forbes* list related to net worth in the Federal Statistical Office's national accounts.

Sources: Destatis 2013; *Forbes* magazine, *The World's Billionaires* List.

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According to *Forbes* magazine, the wealth of dollar billionaires is rising again since the end of the financial crisis.

worth of German dollar billionaires has increased by 30 percent since 2000.¹⁵

The Total Net Worth of Households Rose Sharply from 2002 to 2007 ...

Taking into account the reassessed top levels of net worth in the SOEP, total net worth rose from 5.8 trillion euros in 2002 to 7.8 trillion euros (see Figure 2) in Scenario 1 (see below and Box 2 on the differences between Scenarios 1 and 2). This represents an increase of over one-third of the total net worth, and so emphatically underscores the extreme relevance of very high net worth individuals for wealth distribution.

Here, the variation on the basis of diverse assumptions for 2002 and 2007 is less than in 2012, since the parameters are within a narrower band of variance. Moreover, the sample quality on the upper margin of distribution is better in these years.¹⁶

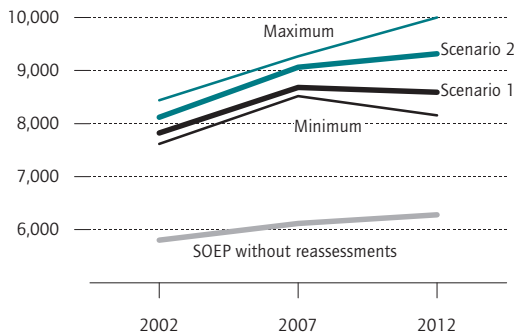
¹⁵ However, among other things, this growth is based on a changed dollareuro exchange rate. The conversion into euros was based on the exchange rate on March 1 of the year in question, since this is always close to the publication date of the annual *Forbes* list.

¹⁶ An indicator of the quality of the sample on the upper margin of distribution is, for example, the quotient from the actual sample size n versus the weighted number of households N , which exceed a certain wealth threshold. In addition, a regression estimator is used to estimate the parameters for the Pareto distribution which takes into account the weighting of the cases.

Figure 2

Total Net Worth of Households¹ with Reassessment of the Top Margin of Wealth

In billion euros



¹ Households, excluding the institutional population.

Sources: SOEPv29; Forbes magazine; own calculations.

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The simulation of the highest net worth individuals had a significant effect on the estimated total net worth of households.

On the basis of this expanded dataset, aggregated total net worth increased by just under ten percent between 2002 and 2012 (Scenario 1) but continued to remain behind the growth recorded by the German Federal Statistical Office's (FSO's) aggregated national wealth.¹⁷

... and Only Changed Minimally in the Years of the Financial Crisis

For a number of reasons, in comparison to 2002 and 2007, estimates of the volume of private net worth in 2012 are subject to considerable statistical uncertainty. First, the parameters of the Pareto distribution are difficult to identify, and broader intervals have to be estimated. Second, in comparison to the other years, a scaling parameter in the model was varied more robustly to compress net worth. This corrected the number of observations on the upper margin of the base sample in the SOEP survey which had fallen sharply between 2002 and 2012. Hence, the inequality of the distribution among the top high net worth individuals may well be substantially overestimated in Scenario 1 (without the scaling

parameter).¹⁸ As a result, the inequality in wealth distribution on the upper margin in Scenario 1 is probably overestimated, while total net worth is underestimated.

Scenario 2 takes this situation into account by correcting the distribution on the assumption that the sample might be distorted toward the middle class (middle class bias).¹⁹ Consequently, Scenario 2 records higher total net worth overall. Depending on the year in question, this raises the aggregated total net worth by 40 to 48 percent over the SOEP sample without reassessment of the top high net worth individuals. Moreover, this Scenario not only shows an increase in wealth from 2002 to 2007, but this growth also continued in 2012 so that the total net worth in 2012 amounted to approximately 9.3 trillion euros. According to this estimate, aggregated net worth grew by just under 15 percent in comparison to 2002.

Due to the lack of external data—for example, wealth tax statistics—as well as valid samples on the assets of high net worth individuals, the estimates of aggregated total net worth are associated with a high degree of uncertainty—evident, *inter alia*, in the significant difference between Scenarios 1 and 2. In 2012, this difference amounted to over 700 billion euros, or over eight percent in relation to Scenario 1.

The Richest One Percent Own between 31 and 34 Percent of Total Net Worth

The expanded dataset also facilitates an estimate of the share of wealth owned by the richest one percent in the distribution of wealth (see Figure 3). In 2012, according to this data, the top one percent owned over 30 percent of the total net worth (Scenario 1).²⁰ Compared to the base SOEP scenario without reassessment, this represents growth of over two-thirds (18 percent). The growth is even stronger in Scenario 2, with the top one percent estimated to own 34 percent of total net worth, a figure

¹⁸ The Pareto distribution estimates clearly indicate the inequality in the distribution of Pareto-distributed top net worth individuals. The lower the coefficient, the higher the inequality. Thinning out the observations on the survey's upper margin leads to underestimating the parameter; at the same time, the number of persons on the upper margin is similarly underestimated, which reduces total assets as well as the top net worth individuals and the value overall.

¹⁹ For selective non-response in wealth surveys in the USA, see A. Kennickell and R. L. Woodburn, "Consistent Weight Design for the 1989, 1992, and 1995 SCFs, and the Distribution of Wealth," Federal Reserve Board, Survey of Consumer Finances Working Papers (1997).

²⁰ For the period of 2010/2011, depending on the assumptions, comparable estimates for top high net worth individuals based on HFCS and Forbes data show the top five percent owning 51 to 53 percent of total net worth; see P. Vermeulen (2014), "How fat is the top tail of the wealth distribution?," Working Paper Series 1692, European Central Bank. Estimates using the SOEP and Forbes data result in a share owned by top five percent of 52 percent (Scenario 1) to 57 percent (Scenario 2).

¹⁷ On the basis of the Federal Statistical Office's national accounts, the net worth of private households and non-profit private organizations has grown by 50 percent. This growth, far larger than in the survey data, may be primarily due to different methods of valuation, since real estate is listed at replacement cost in the national accounts but at market prices in the surveys.

Box 2

Methodological Aspects of Estimating the Assets of High Net Worth Individuals

In the upper part of the distribution, a Pareto distribution can be used to estimate the distribution of income and assets. The distribution's probability density is then given by

$$f(x) = \frac{\alpha}{w_{min}} \left(\frac{w_{min}}{x} \right)^{\alpha+1}$$

where α is a constant parameter, also known as the Pareto coefficient, and w_{min} describes the threshold from which a particular distribution can be approximated using a Pareto distribution.

The model used here to estimate the upper margin of wealth distribution is based on a combination of survey data and data on the absolute peak of distribution derived from all those with German citizenship on the list of billionaires published annually by the US *Forbes* magazine. However, the *Forbes* lists do not provide sufficient details every year to be able to determine whether these individuals are also living in Germany.¹

To estimate the assets of high net worth individuals, it is necessary to combine survey datasets and the *Forbes* list, since there is no alternative source of data which provides a near adequate picture of their real wealth.

The method applied here started by estimating the Pareto distribution parameters on the basis of the net worth of households in the surveys and the data on the high net worth individuals. In this process, it was assumed that the individuals on the *Forbes* list each represent a single household.² Afterwards, the empirically observed cases between w_{min} and the billionaires known from the *Forbes* list were deleted, and this part simulated in the dataset to match the estimated Pareto distribution. As a result, the inequality statistics and the percentages of the richer strata were recalculated. These then convey a more realistic picture of the associations than the original survey data.

Since the *Forbes* list gives the net worth of individuals in US dollars, the exchange rate on March 1 of the year in question

was taken to convert the amounts into euros. March 1 is always close to the publication date of the *Forbes* list in spring.

This process, though, is connected to additional assumptions which lead to an increased degree of uncertainty in the estimates, as explained below.

(1) For example, no statistical tests are applicable to determine or falsify a selected α or w_{min} when working with data from different sources. Here, w_{min} is determined graphically; simulations, however, show that the estimated value of α relative to w_{min} exhibits a robustly regular shape, i.e., at least one range of values can be given which, with a very high probability, also includes the real value of w_{min} . Setting w_{min} too low leads to results underestimating the concentration of wealth on the upper margin; if the figure is set too high, the concentration is overestimated. For these calculations, w_{min} represented a band from 900,000 to 1,350,000 euros. The variation effect results in a "minimum" and a "maximum" (see below).

(2) Surveys suffer from a differential nonresponse on the upper margins of wealth distribution. Studies in the US have shown that the probability of taking part in such a survey is negatively correlated to an individual's net worth.³ Since extrapolation factors are allowed for when calculating the Pareto parameter with a regression estimator,⁴ these should, as far as possible, take into account the structure of the differential nonresponse. Should this either not be possible or only partially since, as in reality, the structure is simply unknown, the concentration of net worth on the upper margin will be overestimated, as can be demonstrated accordingly in simulations.

(3) The problems in estimating α described in (2) are also connected to the question of exactly how many households lie above the value of w_{min} . If one assumes a typical distortion toward the middle class in the sample data, i.e., including a disproportionate number of persons from the middle or upper middle class, the figure for households in the Pareto distribution estimated on the basis of the survey will be too

¹ Moreover, there may also be individuals living in Germany who are not German nationals but should be classified together with other private households.

² It is not possible to tell from the *Forbes* list whether the households of these individuals include other members or not.

³ See A. Kennickell and R. L. Woodburn, "Consistent Weight Design for the 1989, 1992, and 1995 SCFs, and the Distribution of Wealth," Federal Reserve Board, Survey of Consumer Finances Working Papers (1997).

⁴ It is not possible to determine the w_{min} parameter using the alternative of maximum-likelihood estimation if the observations are taken from two different datasets, see P. Vermeulen (2014).

low, while the inequality within the group of the top high net worth individuals will be overestimated (see (2)). Hence, one can observe here two contrary effects for inequality and the concentration of wealth on the upper margin.

(4) The issue of the reliability of the data in "rich lists" published in such magazines as *Forbes* also remains unresolved. Assuming that mistakes in the details are merely coincidental would have a negligible effect on the estimated assessments here. However, should the estimates be structurally too high or too low, this would have a significant impact on the estimations. Admittedly, since neither the sources of data nor the method of obtaining the information are made public, the details in the list ultimately cannot be verified.⁵

Two Scenarios to Determine the Distribution of High Net Worth Individuals

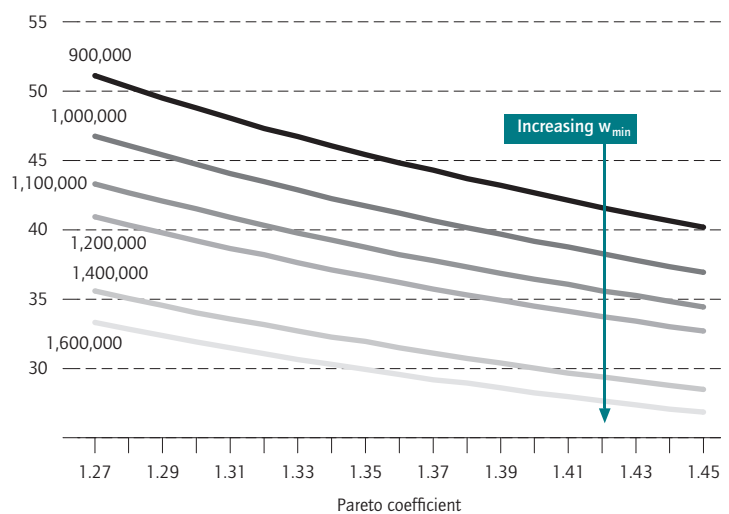
Here, the parameter w_{min} is calculated both graphically and empirically since α follows a regular path relative to w_{min} and so the two parameters can be determined simultaneously. Determining w_{min} using other methods or expert previous knowledge can distort the calculations. For example, the illustration shows how the total net worth in 2012 after reassessing the high net worth sector varies relative to α and w_{min} . The lower w_{min} is, the higher the reassessed amount of wealth. A similar pattern can be observed with the Pareto coefficient α . If w_{min} is set too low for a particular calculation, this results, in this empirical case, in a more severe distortion in the estimation of total net worth than setting α too low.

In order to remedy (2) and (3) we have introduced an additional scaling parameter which serves to compress the observed distribution on the upper margin to counter the potential underestimation of α (inequality too high) as well as produce variations in the number of households above w_{min} (increasing total net worth, smaller gaps between survey and external data). In the simulation, the scaling parameter variation amounted to a minimum value of 0.95 and a maximum of 1.2.

⁵ When US federal tax authority researchers compared the tax data of deceased persons and the Forbes list, they discovered that the list overestimated net worth by approximately 50 percent, primarily due to assessment difficulties, fiscal distinctions, and poor assessment of liabilities, see B. Raub, B. Johnson, and J. Newcomb: "A Comparison of Wealth Estimates for America's Wealthiest Descendants Using Tax Data and Data from the Forbes 400," National Tax Association Proceedings, 103rd Annual Conference on Taxation (2010): 128–135.

Figure

Changes to Total Net Worth¹ by Reassessment in Relation to α and w_{min} In percent



¹ Households, excluding the institutional population.

Sources: SOEPv29; Forbes magazine; own calculations.

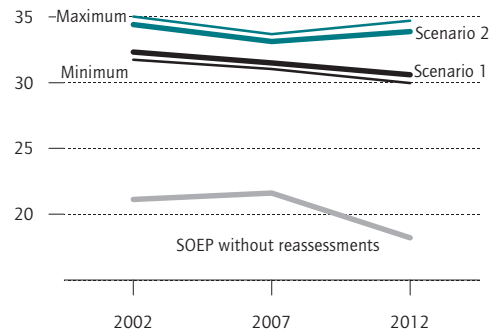
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As a result, this facilitated a scenario with least compression ("Scenario 1") as well as a scenario with maximum compression ("Scenario 2"). Additional variations within Scenarios 1 and 2 result from estimating different values for w_{min} and α in line with the uncertain identification of parameters (particularly in 2012) due to the lower number of observations on the upper margin of distribution in the SOEP survey. Following the parameter w_{min} as determined by the graph, the regression estimates of the α parameter fluctuate between 1.33 and 1.38 (in 2002 and 2012) as well as 1.35 and 1.40 (in 2007). In the graphs, the minimum and maximum values of the estimations from varying this parameter are clearly labeled "minimum" and "maximum."

Figure 3

Share of the Top One Percent of Total Net Worth¹

In percent



¹ Households, excluding the institutional population.

Sources: SOEPv29; Forbes magazine; own calculations.

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The simulation shows an estimated share of the top one percent of approximately 30 to 35 percent.

almost twice as high as that in the SOEP survey without the requisite reassessment.

In addition, over time, the base scenario shows different trends from the expanded dataset. While a slight reduction in the share of the top one percent can be identified in the base scenario between 2002 and 2012 (21 percent to 18 percent), no significant change is evident in the estimates using the expanded dataset, even with the financial market crisis during this period.

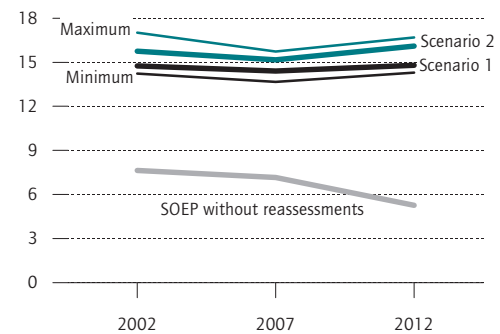
With the same variation in assumptions and parameters, the share of the richest 0.1 percent of households in Germany is between 14 and 16 percent (see Figure 4). Hence, in comparison to the SOEP survey without reassessment, the wealth share of these top high net worth households has tripled (five percent in 2012).

We define the wealthy as the richest ten percent of households minus the top one percent, i.e., all those households between the 90th and 99th percentile of wealth distribution (see Figure 5). According to the estimates of total net worth using base scenario data, their share from 2002 to 2012 was approximately 36 percent. The expanded dataset allows the extrapolation of various trends. In Scenario 2, between 2002 and 2012, this group's share of wealth increased by four percentage points to 38 percent. In Scenario 1, the share of the wealthy also rose initially by around four percent between 2002 and 2007 but declined slightly again in the following years. However, in comparison to the SOEP

Figure 4

Share of the Top 0.1 Percent of Total Net Worth¹

In percent



¹ Households, excluding the institutional population.

Sources: SOEPv29; Forbes magazine; own calculations.

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In 2012, reassessment tripled the share of the top 0.1 percent.

survey without reassessments, the reassessment at the upper margin resulted in virtually no change in the net worth share of the wealthy.

Overall, on the basis of these figures, the richest ten percent of the wealth distribution accounts for 74 percent (Scenario 2) of total net worth in 2012. This value is substantially higher than the previously published figure of over 60 percent based on sheer population surveys.²¹

Conclusion

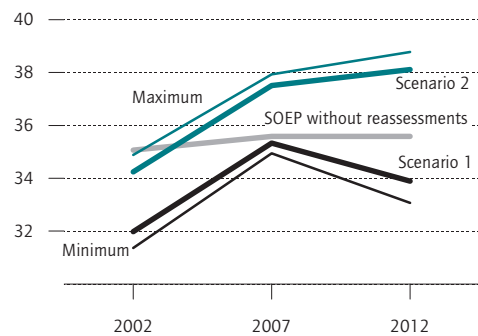
In recent years, the targeted surveys by the SOEP and the Bundesbank's PHF study have considerably improved the data available on the distribution of private wealth in Germany, although the situation is still not entirely satisfactory. However, this only applies to the sector of high net worth individuals. Despite considerable efforts to include the very wealthy in the random sample interviews, this has only had limited success in surveys since hardly any multimillionaires participate and—also due to their very low numbers—no billionaires are in the samples. However, given that wealth distribution shows far greater inequality than current income—as is known in principle from other studies—the very wealthy are more important for statistically determining inequality ratios in such random samples. Including the very wealthy in a

²¹ See for example J. R. Frick and M. M. Grabka, "Gestiegene Vermögensungleichheit in Deutschland," Wochenbericht des DIW Berlin, no. 4 (2009): 54–67.

Figure 5

Share of the Wealthy of Total Net Worth¹

In percent



¹ Households 90th to 99th percentiles, households, excluding the institutional population.

Sources: SOEPv29; Forbes magazine; own calculations.

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Reassessment has relatively little impact on the wealthy's share of net worth.

reassessment of the figures can lead to improved estimates for the sum of aggregate wealth as well as wealth inequality overall. The validity of such a reassessment is, however, based on a number of assumptions which generate a greater level of insecurity in the estimated results. In particular, there is a lack of valid external statis-

tics or official lists²² to calibrate estimates and increase their accuracy. In other countries, for example in Spain, wealth tax details provide data that are considerably more precise. In Germany, although this problem cannot be completely resolved by targeted and more comprehensive surveys, it can be substantially reduced.

Although the estimates presented here are calculated from an expanded SOEP dataset based on a variety of assumptions, they do tend to indicate there is, in all probability, considerably higher wealth inequality in Germany than the standard survey data could have feasibly described previously. For example, the top one percent may well account for over 30 percent of the total net worth, and the top 0.1 percent for as much as approximately 14 to 17 percent. As a result, in comparison to the estimates solely based on surveys, the top 0.1 percent's share of total net worth tripled in 2012.

The uncertainty of the estimates shows that improving the possible methods for acquiring statistical data on the net worth of households continues to be an important task. Here, policymakers also have to play their part and work together with the research community on projects to improve the insufficiency of the existing datasets.

²² Sweden, for example, has compiled a register for decades of all persons subject to a wealth tax. The data from these censuses allow valid statements on the distribution of wealth and national wealth overall. However, recently Sweden suspended its wealth tax so that now this country also has difficulties in making valid statements on wealth distribution.

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