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# Long Hours for Low Pay

by Karl Brenke

There has been no robust growth of the low-pay sector in Germany since 2006. Over the past few years, a constant 22 percent of all employees have fallen into this category. The job structure within the low-pay sector has not changed in the last decade. In the economy as a whole, however, there has been less and less demand for low-skilled work, which is increasingly becoming concentrated in the low-pay sector.

The low-pay sector include many people in part-time and, in particular, marginal employment. Only half of them are in full-time employment. As a result of low hourly rates, they accept long working hours so as to be able to earn a reasonable living. Those in full-time employment in the low-pay sector work an average of almost 45 hours a week, and a quarter of them 50 hours or more. However, this does not go very far towards compensating for the disparity between their pay and average monthly earnings. Working hours comparable to those of low-wage earners are otherwise only seen at the top end of the pay scale, in other words, among high earners in full-time employment. The majority of part-time workers, particularly those with mini-jobs would like to work more and earn more; a hidden underemployment is evident here.

Working in the low-pay sector does not automatically or normally go hand in hand with social welfare benefits; only one in eight of low earners are Hartz IV benefit recipients. The proportion of people in full-time employment in the low-pay sector is particularly small; they only claim state benefits if they have to provide for a larger family. And only a minority of low-wage earners in part-time work or with mini-jobs receive social welfare benefits. There are normally other people living in their household who are in employment, or there is another source of income such as a pension or private support payments.

The present paper is based mainly on data from the German Socio-Economic Panel Study (SOEP).<sup>1</sup> This includes all employees apart from trainees, interns, or those participating in employment initiatives.<sup>2</sup> According to the standard OECD definition, these employees are classified as working in the low-pay sector if their gross hourly earnings are no higher than two-thirds of the median wage.<sup>3</sup> The minimum wage threshold in 2010 was 9.25 euros per hour gross.

In the following study, low wages will be considered from a different perspective than usual. The prime concern is not with socio-structural characteristics of employees or regional aspects,<sup>4</sup> nor are personal employment trajectories of relevance here.<sup>5</sup> Rather, the focus will be on remuneration and working hours, taking into consideration the household context of low-wage workers. The question as to what extent low pay goes hand in hand with social welfare benefits will also be addressed.

**1** 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),“ *ASTA Wirtschafts- und Sozialstatistisches Archiv*, no. 2 (2008).

**2** Employment initiatives and work opportunity schemes (one-euro jobs).

**3** Data on the hourly rate are not directly collected in the surveys of the German Socio-Economic Panel Study. However, it is possible to calculate this on the basis of the gross monthly pay and the number of hours normally worked per week: gross monthly pay divided by weekly hours multiplied by a factor of 4.2.

**4** For a more recent study on this subject, see T. Kalina and V. Weinkopf, „Niedrigbeschäftigung 2010: Fast jeder Vierte/r arbeitet für Niedriglohn,“ *IAQ-Report* no. 1 (2012).

**5** H. Schäfer and D. Schmidt, *Der Niedriglohnsektor in Deutschland: Entwicklung, Struktur und individuelle Erwerbsverläufe* Berlin (2011). Report written by the Cologne Institute for Economic Research (Institut der Deutschen Wirtschaft Köln) on behalf of the New Social Market Economy Initiative (Initiative Neue Soziale Marktwirtschaft).

### Low-Pay Sector No Longer Growing Disproportionately

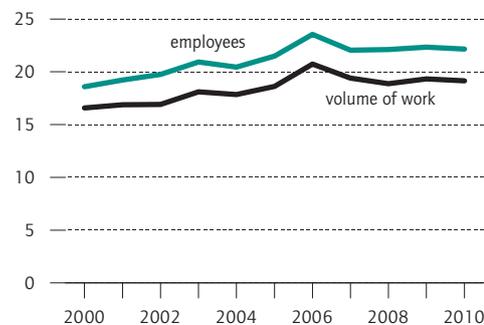
The proportion of all employees working in the low-pay sector reached its peak in 2006, while it dropped slightly the following year and has remained constant at 22 percent since then (see Figure 1). Because—apart from cyclical fluctuations—there has been an overall increase in employment over the past few years, the number of employees in the low-pay sector has grown slightly in absolute terms, however. In 2010, this figure was 7.3 million. For several years now, the low-pay sector has therefore been developing at the same pace as total employment; the days of disproportionate growth of this sector seem to be over.

What is lower than the proportion of workers is the proportion of the total number of hours worked that can be attributed to the low-pay sector (19 percent). This means that those in this sector work fewer hours on average. In 2010, they worked 31.6 hours a week, while the corresponding figure was 38 hours on average outside the low-pay sector. This is solely due to the differences in the contractual working hours: part-time jobs, especially marginal employment (such as mini-jobs which pay less than 400 euros with no social security contributions), are overrepresented in the low-pay sector; on the other hand, full-time work is relatively uncommon (see Table 1). Nevertheless, as the dominant form of working hour arrangement in Germany, full-time jobs also

Figure 1

#### Proportions of Employees in the Low-Pay Sector and Volume of Work<sup>1</sup>

In percent



<sup>1</sup> Excluding trainees and people in employment initiatives.  
Source: German Socio-Economic Panel Study (v27), calculations by DIW Berlin.

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The proportion of employment in the low-pay sector has been stagnating since 2007.

account for a significant proportion of employment contracts in the low-pay sector—just under half. They numbered 3.5 million in 2010. In terms of the contractual working hours, the structure of the low-pay sector barely changed at all in the last decade.

### Decline in Low-Skilled Work and Further Shift Towards Low-Pay Sector

The structure of requirements regarding qualifications has not changed in the low-pay sector, either. Throughout the whole of the last decade, just under half of low-wage workers were in an occupation for which no vocational training was necessary, and just as many had a job requiring an apprenticeship (see Table 2).<sup>6</sup> The rest carry out highly skilled work.<sup>7</sup> Those in part-time and marginal employment tend to have low-skilled jobs. Low paid full-time workers, on the other hand, are predominantly seen in occupations requiring an apprenticeship. The job structure of these employees has not changed in the last decade, either.

<sup>6</sup> Low-wage workers whose occupation requires an apprenticeship diploma include, for instance, sales assistants, practice nurses, domestic workers, bakers, butchers, those in the hospitality industry, florists, hairdressers, office workers, or carers.

<sup>7</sup> Low-paid employees in highly skilled occupations are to be found, for example, among teachers and in the social professions.

Table 1

#### Structure of Employment<sup>1</sup> Within and Outside the Low-Pay Sector in 2010

In percent

	Low-pay sector	Other pay sectors	For information: proportion of all employees in the low-pay sector
Full-time employees	48	77	15
Parttime employees <sup>2</sup>	22	18	26
Occupying a mini-job or other marginal employment	30	6	60
Total	100	100	22

<sup>1</sup> Excluding trainees and people in employment initiatives.

<sup>2</sup> Excluding those in mini-jobs or other marginal employment.

Source: German Socio-Economic Panel Study (v27), calculations by DIW Berlin.

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There is a relatively high number of part-time workers and people in mini-jobs who are employed in the low-pay sector.

On the other hand, we have seen a completely different trend outside the low-pay sector. Here, there has been a sharp decrease in low-skilled work. In line with this, there has been an increasing shift of low-skilled work towards the low-pay sector. Whereas just over a third of all jobs in Germany requiring no formal qualifications were still in this sector in 2000, ten years later it was almost a half (see Figure 2). Nevertheless, the proportion of low paid workers among those pursuing a highly skilled occupation is not only marginal—it corresponds to about a sixth.

The fact that low-skilled work is increasingly losing importance and a growing proportion of this is low paid may be because a relatively high demand for low-skilled jobs puts pressure on the pay level. Although unemployment has fallen in the past few years, including for those without vocational training, the unemployment rate among these individuals is still well above the average (see Figure 3). Evidently, the number of people who can only work in occupations not requiring a very high level of specialist knowledge is not decreasing much faster than the supply of unskilled work.

### Longer Than Average Working Hours in the Low-Pay Sector

It is clear that in the low-pay sector, both full-time/part-time employees and those in marginal employment work much longer hours than other employees with comparable working hour arrangements (see Table 3). However, low-wage workers are only normally able to compensate to a limited extent the difference in hourly rates compared to average earners by working longer hours. This also applies with respect to net wages, although there is a smaller disparity between low-wage workers and other employees than with gross pay—due to their relatively low level of deductions.

What is particularly striking are the long weekly working hours of many full-time employees in the low-wage sector. Half of them clocked up at least 42 hours a week in 2010; the average was as high as almost 45 hours. Nevertheless, a quarter of them claim to normally even work 50 hours a week or more.<sup>8</sup> Full-time employees in the low-pay sector earn on average a gross monthly salary of 1,350 euros. Despite low hourly rates, some even manage to take home a monthly gross pay of around 2,000 euros (see Figure 4). Consequently, a significant proportion of low paid full-time employees thus have an income above the level of social welfare benefit recipients—but they

<sup>8</sup> This is higher than what is normally permitted by law—see Section 7, para. 8 of the German Working Hours Act (Arbeitszeitgesetz).

Table 2

### Structure of Employees' According to Qualifications Required for Their Occupation

Proportions in percent

	All employees			Full-time employees		
	Low-pay sector	Other pay sectors	Total	Low-pay sector	Other pay sectors	Total
<b>2000</b>						
No vocational training	48	19	25	35	17	20
Apprenticeship and/or vocational college	47	60	58	59	61	61
University of applied science or other university	5	21	18	6	21	19
<b>2005</b>						
No vocational training	48	17	23	34	15	18
Apprenticeship and/or vocational college	47	61	58	59	62	61
University of applied science or other university	5	22	19	7	24	21
<b>2010</b>						
No vocational training	48	14	21	32	11	14
Apprenticeship and/or vocational college	47	60	57	60	60	60
University of applied science or other university	5	26	22	8	28	25

<sup>1</sup> Excluding trainees and people in employment initiatives.  
Source: German Socio-Economic Panel Study (v27), calculations by DIW Berlin.

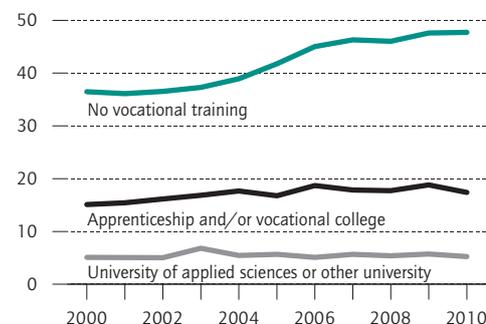
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Low-skilled work is continuing to decline in Germany—but not in the low-pay sector.

Figure 2

### Employees' in the Low-Pay Sector According to Qualifications Required for the Relevant Occupation

Proportion of all employees in percent



<sup>1</sup> Excluding trainees and people in employment initiatives.  
Source: German Socio-Economic Panel Study (v27), calculations by DIW Berlin.

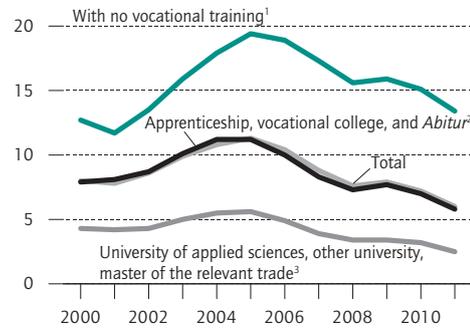
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There is an increasingly higher concentration of unskilled jobs in the low-pay sector.

Figure 3

**Unemployment Rate by Qualification**

In percent



1 ISCED 0 to 2.  
2 ISCED 3 to 4.  
3 ISCED 5 to 6.  
Source: Eurostat.

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Unemployment among those with minimal qualifications is falling, too, but it is still high.

have to put in a lot of hours every week. This applies in particular to drivers, warehouse workers, and those employed in the hospitality industry. Otherwise, there is a relatively large number of employees working long hours every week among the high-income earners. Therefore, as far as full-time employees are concerned, low-wage workers and high earners work particularly long hours. There are, however, also quite a few full-time workers in the low-pay sector with very low monthly earnings. A quarter did not even earn a gross salary of 1,200 euros; the net pay of the quartile with the lowest remuneration is a maximum of 850 euros.

Particularly among full-time employees, overtime is widespread. It is only unusual for one-fifth of them—this also applies to employees outside the low-pay sector (see Table 4). Full-time employees in the low-pay sector who work overtime still put in more hours than others, however. Moreover, there are a significant number of employees here whose working hours are not stipulated by contract. These people work particularly long hours.

Those in marginal employment receive better net hourly rates than other workers in the low-pay sector.<sup>9</sup> These are normally people with special employment contracts (such as mini-jobs in particular) and they are not liab-

<sup>9</sup> Although the majority of those in marginal employment belong to the low-pay sector, there are also people who work shorter hours and have a higher income. A small group has a strong impact on the average hourly rates of those in marginal employment outside the low-pay sector.

Table 3

**Weekly Working Hours and Pay of Employees<sup>1</sup> Within and Outside the Low-Pay Sector in 2010**

In euros

	Full-time employees		Part-time employees <sup>2</sup>		Occupying a mini-jobs or other marginal employment	
	Low-pay sector	Other pay sectors	Low-pay sector	Other pay sectors	Low-pay sector	Other pay sectors
<b>Weekly working hours</b>						
Mean value	44.9	42.8	28.0	25.8	13.0	9.6
Lower quartile	40.0	40.0	22.0	20.0	8.0	6.0
Median	42.0	41.0	30.0	25.0	12.0	8.5
Upper quartile	50.0	45.0	32.5	30.0	16.0	12.0
<b>Gross hourly rate</b>						
Mean value	7.18	18.44	6.82	16.16	5.95	20.12
Lower quartile	6.35	12.96	6.06	11.90	4.76	9.58
Median	7.62	16.29	7.14	14.58	6.12	11.90
Upper quartile	8.57	20.90	8.06	18.06	7.62	19.05
<b>Net hourly rate</b>						
Mean value	5.30	11.95	5.19	10.48	5.64	10.88
Lower quartile	4.67	8.50	4.29	7.88	4.29	8.57
Median	5.56	10.64	5.24	9.52	5.95	9.52
Upper quartile	6.24	13.27	6.19	11.94	7.14	11.43
<b>Gross monthly pay</b>						
Mean value	1,49	3,263	793	1,723	305	774
Lower quartile	1,182	2,300	600	1,186	170	600
Median	1,350	2,900	800	1,566	325	800
Upper quartile	1,559	3,750	984	2,111	400	984
<b>Net monthly pay</b>						
Mean value	992	2,115	595	1,115	284	402
Lower quartile	850	1,500	450	783	170	240
Median	1,000	1,890	600	1,000	300	360
Upper quartile	1,150	2,400	720	1,400	400	400

1 Excluding trainees and people in employment initiatives.  
2 Excluding those in mini-jobs or other marginal employment.  
Source: German Socio-Economic Panel Study (v27), calculations by DIW Berlin.

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Employees in the low-pay sector work longer than average hours.

le for tax and social security payments. Because of this privilege, earning 5.60 euros per hour, those with mini-jobs are paid even a higher net hourly rate on average than other employees in the low-pay sector (between 5.20 and 5.30 euros per hour). Moreover, the difference in liability for deductions also levels out the disparity in net hourly rates between part-time employees subject to social security payments and full-time workers to a considerable extent.

Nevertheless, hourly rates of part-time and marginal employees in the low-pay sector, too, are normally only meager and working hours often relatively long—even without overtime. Those in marginal employment are

particularly frequently remunerated with a piecework rate—and not only low-wage workers. In the low-pay sector, relatively long hours have to be worked for a fixed amount of pay, however.

### Only a Minority of Low-Wage Earners Claim Hartz IV or Housing Benefit

The argument that employees must be taking home enough to make ends meet is often heard as justification for the general introduction of a minimum wage. This should at least apply to those in full-time employment.<sup>10</sup> This argument does make immediate sense since, if income is insufficient, this becomes the responsibility of the state.

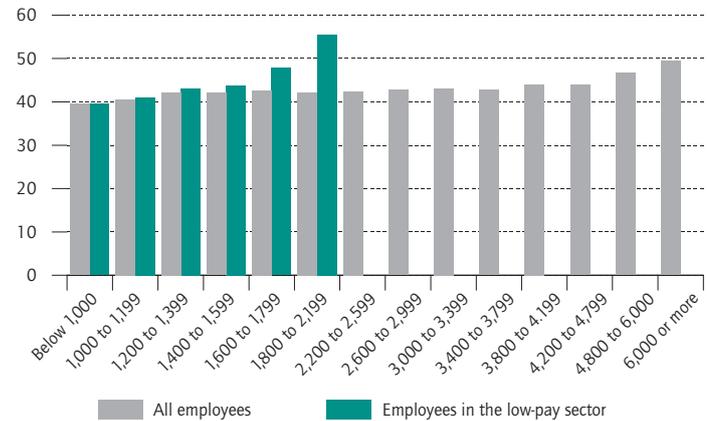
Correspondingly, minimum wage advocates regard the fact that so many employed people claim unemployment benefit II (reformed benefit combining long-term unem-

<sup>10</sup> See, for example, the policy statement by the German Social Democrats (Sozialdemokratische Partei Deutschlands) passed at the SPD Party Conference in Hamburg, October 28, 2007, p.54.

Figure 4

### Average Weekly Working Hours of Full-Time Employees<sup>1</sup> According to Their Gross Monthly Pay

In hours



<sup>1</sup> Excluding trainees and people in employment initiatives.

Source: German Socio-Economic Panel Study (v27), calculations by DIW Berlin.

Long working hours are found primarily in the low-pay sector and among high earners.

Table 4

### Employees<sup>1</sup> Working or Not Working Overtime and Their Weekly Working Hours in 2010

In hours

	Full-time employees		Part-time employees <sup>2</sup>		Occupying a mini-job or other marginal employment		Total	
	Low-pay sector	Other pay sectors	Low-pay sector	Other pay sectors	Low-pay sector	Other pay sectors	Low-pay sector	Other pay sectors
<b>Structure of employees in percent</b>								
No fixed working hours	11	5	8	5	28	31	15	7
Fixed working hours and regular overtime	69	75	69	68	24	24	56	71
Fixed working hours and no overtime	20	19	23	27	48	45	29	22
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
<b>Mean values</b>								
No fixed working hours	49.0	47.2	25.9	21.6	12.7	9.2	27.0	34.1
Fixed working hours and regular overtime	45.8	43.6	29.7	27.3	15.2	13.1	37.5	40.2
Fixed working hours and no overtime	39.2	38.9	24.0	22.7	11.7	8.0	22.8	31.8
<b>Total</b>	<b>44.9</b>	<b>42.9</b>	<b>28.1</b>	<b>25.7</b>	<b>12.8</b>	<b>9.6</b>	<b>31.6</b>	<b>38.0</b>
<b>Medians</b>								
No fixed working hours	50.0	50.0	25.0	22.0	12.0	8.0	24.0	40.0
Fixed working hours and regular overtime	44.0	42.0	30.0	27.0	14.0	11.0	40.0	41.0
Fixed working hours and no overtime	40.0	40.0	24.0	21.0	12.0	8.0	20.0	38.0
<b>Total</b>	<b>42.0</b>	<b>41.0</b>	<b>30.0</b>	<b>25.0</b>	<b>12.0</b>	<b>8.0</b>	<b>35.0</b>	<b>40.0</b>

<sup>1</sup> Excluding trainees and people in employment initiatives.

<sup>2</sup> Excluding those in mini-jobs or other marginal employment.

Source: German Socio-Economic Panel Study (v27), calculations by DIW Berlin.

Overtime is generally widespread in Germany—those employed in the low-pay sector work particularly long overtime hours.

Table 5

**Employees Receiving Unemployment Benefit II**

In 1,000 people

	Full-time <sup>1</sup>	Part-time <sup>1</sup>	Occupying a mini-job or other marginal employment	Trainees	Total
2007	341	181	574	57	1,153
2008	333	201	639	60	1,234
2009	287	210	668	55	1,220
2010	296	224	699	46	1,265
1st half year, 2011	278	232	683	43	1,236

<sup>1</sup> Those employed in jobs subject to social security contributions.  
Source: German Federal Employment Agency (Bundesagentur für Arbeit), calculations by DIW Berlin.

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Only a small proportion of those claiming Hartz IV are in full-time employment.

ployment and welfare benefits = Arbeitslosengeld (unemployment benefit) II/Hartz IV) as an untenable situation.<sup>11</sup> However, what is often ignored in the debate about those claiming top-up benefits under Book II of the German Social Code (Hartz IV unemployment benefit), is that the absolute majority of the approximately 1.2 million top-up benefit claimants are in part-time, particularly marginal, employment. Only 280,000, i.e., a little more than a fifth of all top-up benefit claimants were in full-time employment in the first half of 2011 (see Table 5). This number has fallen over recent years—however, the number in part-time employment has actually increased. The fact that a part-time or mini-job alone is not enough to make ends meet can hardly come as a surprise and can certainly not be used as an argument for the introduction of a minimum wage. In any case, the number of employed people who receive state benefits on top of their salaries is far lower than the number employed in the low-pay sector.

Furthermore, state social welfare benefits are not a new phenomenon for low-income households. The German Social Assistance Act (Bundessozialhilfegesetz), which made it possible for top-up social benefits to be awarded, has been in effect since 1961, and the Housing Benefit Law (Wohngeldgesetz) since 1971, i.e., a long time before the minimum wage even became a topic of discussion in Germany. The introduction of unemployment benefit II at the beginning of 2005 also led to a change

<sup>11</sup> See, inter alia, The German Federation of Trade Unions (DGB), Department of Labor Market Policy (Abteilung Arbeitsmarktpolitik) (pub.), „Hartz IV–Bedürftigkeit von Erwerbstätigen,“ Arbeitsmarkt aktuell, no. 1 (2012).

in benefit entitlements. The number of working households receiving housing benefit fell from 480,000 at the end of 2004 to 280,000 in December 2005.<sup>12</sup> In 2007 and 2008, this figure was only slightly over 280,000, and in 2009—the year for which the most recent information is available—it increased to 290,000. This could be put down to the economic crisis at that time and the expansion of short-time working. The fact that some households decided to forego unemployment benefit II and, instead, claimed housing benefit combined with the reformed children's allowance may also have had a role to play here.<sup>13</sup>

It is not individual income that determines social need and support through social welfare benefits but rather the income of the household. Over half of all those employed in the low-pay sector live in households with other members earning additional income (see Figure 5). This applies to almost two-thirds of those in low-wage marginal employment. Most other employed members in low-wage households are in full-time employment.<sup>14</sup> Other employed members of low-earning households occupy part-time positions rather less frequently.

Alongside a person's own earnings or those of other household members, other income can also protect against social need. Among those employed full-time in the low-pay sector, virtually no-one claims housing benefit, pensions or other forms of social assistance such as student loans or grants (BAföG) (see Table 6). This is a more frequent occurrence among low-wage part-time employees, in particular among those in marginal employment—especially when a household has no other source of income. Pensioners, school children, and university or college students make up approximately a third of those employed in low-paid mini-jobs. In general, there are a large number of child benefit claimants in the low-pay sector. Child benefit is, of course, not an indicator of social need—nor does it protect from soci-

<sup>12</sup> Federal Statistical Office (Statistisches Bundesamt), Wohngeld. Haushalte mit Wohngeldempfängern und Wohngeldausgaben (Wiesbaden: 2011). The change from housing benefit to unemployment benefit II was advantageous to many benefit claimants as housing benefit only reimbursed most of the monthly rent bill (excluding heating), whereas unemployment benefit II covers both rent and heating bills.

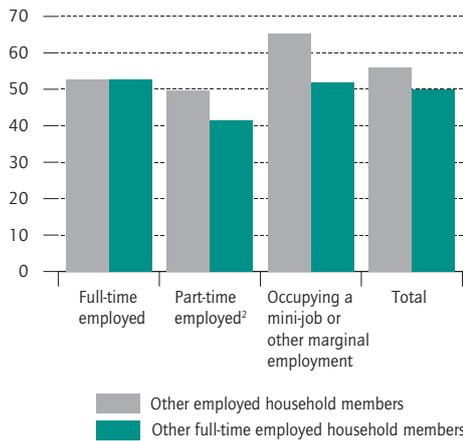
<sup>13</sup> As of October 1, 2008, the structure of the children's allowance was made much more favorable to recipients. For low-earning households with an income that is higher than the remuneration from a normal parttime job, housing benefit and the children's allowance are often similar to unemployment benefit II. K. Brenke and W. Eichhorst, „Arbeitsmarktpolitik: Falsche Anreize vermeiden, Fehlentwicklungen korrigieren,“ Vierteljahreshefte zur Wirtschaftsforschung, no. 79 (1), 61 f. (2010). There are no statistics available on the number of children's allowance recipients.

<sup>14</sup> Other people receiving earned income also include those who were excluded from the analysis of the low-pay sector—particularly the self-employed. However, participants in employment initiatives remain excluded.

Figure 5

**Low-Pay Sector Employees' in 2010 Living in Households with Other Employed Members**

Share of all employees made up by the respective groups, in percent



1 Excluding trainees and people in employment initiatives.

2 Excluding those in mini-jobs and other positions of marginal employment.

Source: German Socio-Economic Panel Study (v27), calculations by DIW Berlin.

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Half of low-wage households have other employed members.

al need, as it is set significantly lower than means-tested benefits for children.

The proportion of those employed in the low-pay sector receiving income from top-up social benefits is, on the whole, not particularly high: Only one in eight receives unemployment benefit II (see Figure 6) and less than one in twenty receives housing benefit. The shares are higher among sole wage earners. Those in part-time employment claim unemployment benefit II most frequently—particularly when a household has no other source of income. This benefit is claimed least frequently by those in full-time employment. Here, unemployment benefit II is essentially only paid out to large households (see Figure 7). Single people in full-time employment claiming Hartz IV are rare exceptions.

Social need among low-wage earners, therefore, particularly arises when their hours are cut, and when there are also no other employed household members and the household has no other sources of income (old age pensions, private maintenance payments). Here, need is frequently a consequence of underemployment. This is further evidenced by the fact that the majority of those

Table 6

**Low-Wage Earners' Receiving Other Selected Forms of Income in Addition to Wages**

Share in percent

Form of income	Full-time employed	Part-time employed <sup>2</sup>	Occupying a mini-job or other marginal employment	Total
<b>All employees</b>				
<b>Own income</b>				
Old age pension	1	4	13	5
Widow's, widower's, and orphan's pension	1	4	2	2
Student loans / grants	0	0	2	1
Private maintenance payments	1	7	5	4
Advance on maintenance payments	0	3	1	1
Unemployment benefit	0	1	3	1
<b>Household income</b>				
Child benefit	36	53	56	46
Long-term care benefits	1	0	2	1
Housing benefit	3	5	5	4
Welfare	1	0	0	1
Minimum old age pension	0	0	3	1
<b>Sole earners</b>				
<b>Own income</b>				
Old age pension	1	9	20	7
Widow's, widower's, and orphan's pension	2	6	5	4
Student loan / grant	0	0	5	1
Private maintenance payments	2	8	11	6
Advance on maintenance payments	1	6	3	2
Unemployment benefit	0	1	3	1
<b>Household income</b>				
Child benefit	25	46	43	35
Long-term care benefits	1	1	3	1
Housing benefit	2	10	9	6
Welfare	1	0	0	1
Minimum old age pension	0	0	5	1

1 Excluding apprentices and those in employment initiatives.

2 Excluding those in mini-jobs or other marginal employment.

Source: Socio-Economic Panel Study (v27); calculations by DIW Berlin.

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Low-wage earners with mini-jobs in particular are likely to have further sources of income.

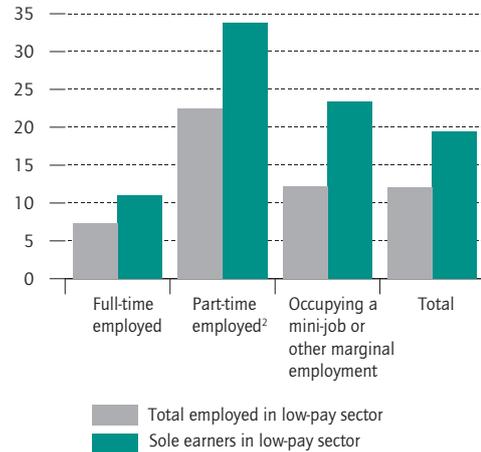
se in marginal and part-time employment would like to work longer hours even if the hourly rate remained the same (see Figure 8).<sup>15</sup> However, a different picture emerges if we look at full-time employees in the low-pay sector. Here, only a small proportion—one fifth—would work longer hours; whereas a somewhat larger share would prefer shorter working hours.

**15** In SOEP surveys, employees are asked how many hours per week they would prefer to work, assuming commensurate changes in income. Those individuals whose preferred working hours did not deviate from their contractually agreed working hours by more than two percent are classified in the data analysis as wanting no change in working hours. The remaining employees are treated as wanting to work longer or shorter working hours.

Figure 6

**Unemployment Benefit II Recipients of All Employed<sup>1</sup> in the Low-Pay Sector 2010**

Share in percent



<sup>1</sup> Excluding trainees and people in employment initiatives.  
<sup>2</sup> Excluding those in mini-jobs and other positions of marginal employment.  
 Source: German Socio-Economic Panel Study (v27), calculations by DIW Berlin.

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Only a minority of low-wage earners claim Hartz IV.

**For and Against the Minimum Wage**

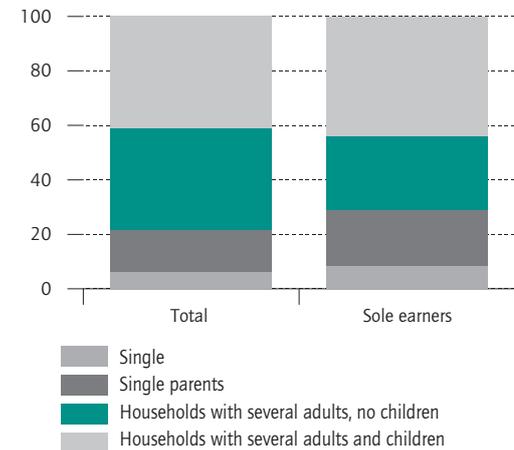
The arguments put forward in favor of the minimum wage are predominantly of an ethical and socio-political nature. The demand that the minimum wage must be high enough to ensure that at least those in full-time employment are able to make ends meet has, certainly from a socio-political perspective, come to nothing. As the present analysis has shown, full-time employment almost always protects single people from social need. Low-wage earners in full-time employment are only awarded top-up social benefits if they live in larger households and they are few and far between. In fact, it is surprising that such people exist at all as they would have to be very low-wage earners to be able to completely replace income from gainful employment with Hartz IV benefits. Clearly, non-monetary motives have a role to play here. Personality traits such as pride could be a factor as could the threat of sanctions from employment agencies.

In a large number of low-wage cases, the household has a further source of income, mostly from full-time employment. This is particularly common among those in mini-jobs and other positions of marginal employment. For the most part, this also protects individuals

Figure 7

**Full-Time Employed in the Low-Pay Sector<sup>1</sup> Receiving Hartz IV, by Household Composition**

Structure in percent



<sup>1</sup> Excluding trainees and people in employment initiatives.  
 Source: German Socio-Economic Panel Study (v27), calculations by DIW Berlin.

© DIW Berlin 2012

Barely any single full-time low-wage employees receive Hartz IV.

from social need. Furthermore, there are some low-wage earners who also claim old age pensions, child support, or student loans and grants. In total, only one in eight employees in the low-pay sector receives Hartz IV—this equates to slightly more than 800,000 people.

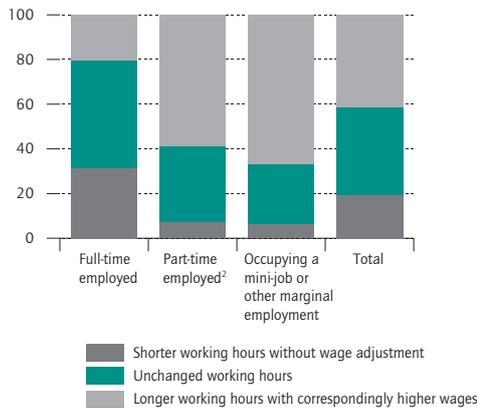
However, it is questionable as to whether social welfare benefits are really the most appropriate benchmark to evaluate the fairness of wage levels. In any case, it should not be overlooked that many low-wage earners only bring home a monthly salary that is more or less adequate, but nonetheless meager, because they have worked long hours in order to be able to do so. A significant number of those in full-time low-wage positions work as many as 50 hours or more per week. This is certainly a socio-political problem. Even those with reduced hours in the low-pay sector are working a relatively high number of hours per week. Frequently, no hourly wage is paid but rather a piecework rate, i.e., a certain output is stipulated which, in the low-pay sector, is set particularly high and, therefore, results in long working hours.

Ethical and socio-political considerations may offer arguments in favor of a minimum wage. However, we must not lose sight of the economic aspects as—alongside regulative arguments—the primary argument proposed

Figure 8

### Preferred Working Hours of Low-Pay Sector Employees<sup>1</sup> in 2010

Structure in percent



<sup>1</sup> Excluding apprentices and people in employment initiatives, and also employees with no agreed fixed working hours.

<sup>2</sup> Excluding those in mini-jobs and other positions of marginal employment.

Source: German Socio-Economic Panel Study (v27), calculations by DIW Berlin.

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Many low-wage workers in part-time or mini-jobs would prefer to work longer hours.

in opposition to the introduction of a minimum wage is that it would destroy jobs. There are numerous studies that attribute minimum wages to detrimental effects on employment. Other studies, however, conclude that this is not the case.<sup>16</sup> The fact that there are already a large number of analyses on the effects of the minimum wage and more are being carried out supports the suspicion that the research community still has some way to go before it reaches its goal of actually determining the effects.

The problem with all these different studies is that they only ever give a partial view of reality. They do not include all relevant correlations and are unable to do this—because the required data, the knowledge about the reactions of market participants, and the understanding of economic cycles do not exist. It is, for example, possible to ascertain that the minimum wage has not led to a loss in jobs in the fast-food industry.<sup>17</sup> However, it could be that, in spite of a rise in prices caused by wage increases,

the customer remained undeterred from buying burgers but, on the other hand, perhaps went to the movies or traveled in a cab less frequently, leading to a loss of jobs in the cinema and taxi industries.

Some studies, particularly those focusing on the costs for companies of the minimum wage or the impact of the minimum wage on prices,<sup>18</sup> generally ignore the macroeconomic impact on demand. To stay with the fast food example, if fast food chain staff experience an increase in wages, this could release additional income for more visits to the movies. It is precisely those with lower income who usually spend the majority of their earnings on consumption. Higher costs resulting from the introduction of a minimum wage may also lead to companies, by way of compensation, increasing their investments, rationalizing more, and focusing on innovation. All of this can not be calculated or modeled.

It also remains unclear what the impact of a minimum wage would be on wage structures. It can also be assumed that, after the introduction of a minimum wage, those who are earning slightly more than that minimum will call for wage increases in order to re-establish the wage gap. However, there is evidence that this is only occurring to a limited extent and the wage gap between unskilled and qualified employment is shrinking.<sup>19</sup> This can have a negative impact on the motivation of some employees which, in turn, could also have implications for educational behavior. Potential consequences for competition are also unpredictable because, in sectors in Germany which have already introduced a minimum wage, employers, too, almost always have a vested interest with a view to protecting themselves from unwelcome competition. For example, the minimum wage introduced in the construction industry in the mid-90s also served to keep East German construction companies away from the West German building sites<sup>20</sup> precisely at a time when the construction industry in the new East German states was in decline.

<sup>18</sup> See K.-U. Müller and V. Steiner, „Mindestlöhne kosten Arbeitsplätze: Jobverluste vor allem bei Geringverdienern,“ Wochenbericht des DIW Berlin, no. 30 (2008); R. Bachmann, T.K. Bauer, J. Kluge, S. Schaffner, and C.M. Schmidt, „Mindestlöhne in Deutschland. Beschäftigungswirkungen und fiskalische Effekte,“ RWI Materialien, no. 43 (2008).

<sup>19</sup> H. Apel, R. Bachmann, P. vom Berge, M. König, H. Kröger, A. Paloyo, S. Schaffner, M. Umkehrer, and S. Wolter, „Mindestlöhne im Bauhauptgewerbe—Folgen für die Beschäftigung blieben aus,“ IAB-Kurzbericht, no. 4 (2012) and P. Rattenhuber, „Building the Minimum Wage. Germany's First Sectoral Minimum Wage and its Impact on Wages in the Construction Industry,“ Discussion Papers of DIW Berlin, no. 1111 (2011).

<sup>20</sup> Had the East German companies which were, at that time, normally less productive, operated in western Germany, they would have had to pay their employees the prevailing wages there which were significantly higher than in the new East German states.

<sup>16</sup> D. Neumark and W. Wascher, *Minimum Wages* (Cambridge, MA: 2008).

<sup>17</sup> D. Card and A.B. Krueger, „Minimum Wages and Employment: A Case Study of the Fast-Food Industry in New Jersey and Pennsylvania,“ Working Paper Series, no. 4509, (National Bureau of Economic Research, Cambridge, MA: 1993).

It is also evident that the introduction of a minimum wage would particularly impact small companies; according to SOEP data from 2010, 45 percent of low-wage earners worked for companies with fewer than 20 employees; this was only the case for 19 percent of other employees. Larger companies in a sector could actually receive competitive advantages through the introduction of a minimum wage.

### Conclusions

If a minimum wage were to be introduced in all sectors in Germany and regulated by law, this would be a field experiment, the positive outcomes of which could not be guaranteed. To prevent negative effects on employment, the whole process must certainly be handled with caution in order to avoid massive and abrupt changes in wage structures, i.e., the minimum wage should not be set overly high. We must always take into consideration that the demand for unskilled work is in decline but, at the same time, the labor market has an abundance of people with limited vocational qualifications. It would be extremely misguided to reduce their job opportunities by introducing an excessive minimum wage.

If Germany is to introduce a minimum wage across the board, a whole range of practical issues also need to be clarified. Specifically, how should the privileged status of the mini-job—which runs counter to the system from a taxation point of view—be handled? The basis for fixing the minimum wage is always gross income. This is a sound approach as it excludes personal and family characteristics that influence wage deductions. However, when it comes to mini-jobs, the gross = net principle applies, which means that those with mini-jobs in the low-pay sector receive, on average, a higher net hourly wage than others employed in that same sector. Secondly, how to determine a minimum wage for employees who are not paid according to hourly but rather piecework rates would also need to be examined. Thirdly, what about unpaid overtime? This could also be used to circumvent minimum wage laws.

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JEL: J31, J81, J42

**Keywords:** low-pay sector, working hours, social welfare benefits

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Karl Brenke is a Scientific Advisor to the Executive Board of DIW Berlin

## SEVEN QUESTIONS TO KARL BRENKE

# » We have hidden underemployment«

1. Mr. Brenke, how has the number of people employed in the low-pay sector developed over the past few years?

The low-pay sector in Germany expanded rapidly up until 2006. Since then, employment in the low-pay sector has only been growing at the same rate as total employment.

2. Why has the number of people in low-paying jobs stagnated? The main contributing factor is that there is no longer a boom in mini-jobs. Furthermore, we are experiencing a generally very positive labor market development in Germany. Consequently, it has been increasingly possible for employees to find jobs outside the low-pay sector. I think growth of the low-pay sector up until 2006 can also be explained by the difficult situation on the labor market.
3. How high is the proportion of part-time workers or those with mini-jobs in the low-pay sector then? Part-time workers, including those with mini-jobs, make up approximately half of this sector. That is well above average. In the economy as a whole, they make up less than a third of all those in employment. However, it is precisely among those in marginal or part-time employment in the low-wage sector that we find many people who actually want to work longer hours, even if it doesn't involve a lot more money. This applies to over half of them. We have hidden underemployment here. People want to do more but can't, and are then forced to accept a part-time job or marginal employment.
4. What types of occupation are particularly common in the low-pay sector? These are mainly jobs in the hospitality and transportation industries, or as shop assistants, hairdressers, and cab drivers. But it also applies to

medical assistants as well as some office jobs which are relatively low paid.

5. How high is the average wage in the low-pay sector? With regard to net wages, it is clear that those in marginal employment are doing relatively well compared to people with a regular part-time job or a full-time position because they don't have to pay tax or social security contributions. As for those in full-time employment, it should be noted that many of them work very long hours. A quarter of them clock up 50 hours a week or more. Because of the long hours they work, many earn 1,700, 1,800 euros a month, or more, while the average pay for those in full-time employment is approximately 1,350 euros per month.
6. How many people in low-paid employment are also receiving government transfer payments? The vast majority of those employed in the low-pay sector are not, as is often suggested in the public arena, dependent on Hartz IV social welfare benefits. This only applies to about an eighth of them. Particularly for those in full-time employment, this is seldom the case. Those in full-time employment only receive Hartz IV benefits if they have to provide for a larger family. Normally, it is low paid part-time workers who are Hartz IV recipients and only if the household has no other source of earnings.
7. Would the introduction of a minimum wage improve the situation? It is difficult to say. I think, basically, we don't really know what effects a minimum wage would have. But it could well be that some jobs disappear if the minimum wage is set too high. The current trend in Germany is that there are fewer and fewer low-skilled jobs. This of course pushes wages down, particularly for people who are not very well educated. If, however, we introduce minimum wages which are not too high, it could also be a way of putting some upward pressure on wages in low-paying jobs.

Interview by Erich Wittenberg.

# Income Distribution: An Important Factor for Economic Forecasts

by Ferdinand Fichtner, Simon Junker, and Carsten Schwäbe

The development of private consumption is a crucial factor in compiling macroeconomic projections as part of national accounts. Household savings also play an important role as an explanatory variable for consumer development, since private households must decide whether to spend their incomes on consumption or saving. The estimated savings rate in DIW Berlin's economic projections can be improved by including micro-data from the German Socio-Economic Panel Study (SOEP). It is evident that the significant increase in the savings rate in the years before the crisis in 2008/2009 is also related to the redistribution of income. While relatively low earners receive their income overwhelmingly from wages or social welfare benefits, wealthy households not only receive higher wages, but also earn the bulk of their money from entrepreneurial activities and income from investments. Particularly in the years before the financial crisis, the latter increased dramatically while wages remained virtually static. Strong income growth has therefore primarily benefited those segments of the population that save a lot. If wage and profit incomes had developed similarly, consumer demand in Germany would have grown faster. In the next two years, however, a further increase in the savings rate is unlikely because of rapidly rising wages.

This report presents a method developed at DIW Berlin which takes into account information from the German Socio-Economic Panel Study (SOEP) on the distribution of income in estimating the aggregate savings rate and also in DIW Berlin's economic projections.<sup>1</sup> This makes it possible to significantly improve the accuracy and, in particular, the consistency of the estimated savings rate with other variables in the projections.

DIW Berlin's quarterly economic projection<sup>2</sup> contains a detailed quantitative and qualitative forecast of economic developments in Germany based on a comprehensive analysis of the current economic situation. The quantitative projection is compiled based on National Income Accounting (NIA), which focusses on circular flows, and among other things, distribution across income categories, the use of gross domestic product, and for its formation to be determined and systematized.<sup>3</sup> Gross domestic product can be represented using various expenditure components (consumer spending, gross investments, and net exports) or various income types (compensation of employees, company revenue, investment income, and others) for the NIA. However, the NIA contains no information about the individual distribution of income; this would require data at the household level.

**1** The SOEP is a wide-ranging representative longitudinal study of private households which has been conducted annually in western Germany since 1984 and in the former German Democratic Republic (GDR) since 1990. 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),“ *ASTA Wirtschafts- und Sozialstatistisches Archiv*, no. 2 (2008).

**2** DIW economic projections („baselines“) generally appear in the first week of each quarter in the *Wochenbericht des DIW Berlin*, see F. Fichtner et al., „Deutsche Wirtschaft vor kräftigem Aufschwung,“ *Wochenbericht des DIW Berlin*, nos. 14+15(2012).

**3** For more details about the NIA, see, for example, the Federal Statistical Office, *Volkswirtschaftliche Gesamtrechnungen: Wichtige Zusammenhänge im Überblick*, 2011, [www.destatis.de/DE/Methoden/Methodenpapiere/Methodenpapiere.html?nn=69170](http://www.destatis.de/DE/Methoden/Methodenpapiere/Methodenpapiere.html?nn=69170).

In addition to the quantitative accuracy—as compared to the growth rate of gross domestic product published retrospectively—internal consistency is the projection’s core and quality criterion. There are well-founded theoretical and empirical relations between the different variables recorded in the NIA: a typical example is the strong correlation between investment and import expenditure (as a large proportion of imports are made up of intermediate goods, which are consecutively used for investments ) or an inverse relationship between labor productivity and unit labor costs (since rising productivity reduces labor costs for a given output quantity).

Private consumer spending, a difficult variable to predict, plays an important role in determining demand-side gross domestic product due to its size (almost 60 percent of nominal gross domestic product).<sup>4</sup> Trust and confidence indicators can be consulted as explanatory variables for private consumption, but the correlation is not usually very strong. It is more informative to determine consumer spending based on income growth. While increased income typically leads to increased consumer spending, it should be noted that many factors may influence household savings and, consequently, private consumption.

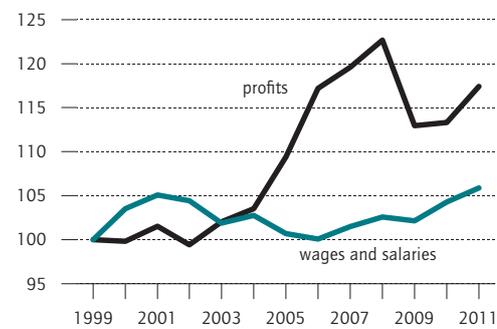
Therefore, although the average disposable incomes of private households increased in the NIA at an average rate of 2.1 percent between 2001 and 2008, private consumption in the same period only grew by an annual average of 1.8 percent. Accordingly, aggregate savings—and thus the savings rate—have increased significantly in Germany over the last decade.

At the same time, it should also be noted that the increase in disposable income was largely based on strong growth in income from self-employment and investments, while aggregate wage income, in particular from 2002, was so weak that at times it was lower than inflation. In real terms, wage income sometimes decreased while profit income recorded strong growth (see Figure 1).

It is often assumed there is a close link between the increase in the savings rate, on the one hand, and the relative development of various income types, on the other. However, this correlation is seldom quantified.<sup>5</sup> While it can be observed that self-employment and investment income (profit income) mainly flow towards higher-in-

Figure 1

**Income in the System of National Accounts<sup>1</sup>**  
Index 1999 = 100



<sup>1</sup> Adjusted for the consumer spending deflator.  
Source: Federal Statistical Office, calculations by DIW Berlin.

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Since the turn of the century, profit income has risen sharply.

come population strata, wage income is more evenly distributed across all income groups. This is indicated in micro-data from the German Socio-Economic Panel Study (SOEP). On average between 1995 and 2010, private households with the lowest 95 percent of household income received almost 86 percent of wage income, but only received 55 percent of profit income (see Figure 2). Conversely, 14 percent of wage income went into the pockets of the top five percent of households, but 45 percent of profit income.

At the same time, SOEP’s data indicate that the greater the income of the population group being considered, the higher the savings rate becomes. Consequently, according to the micro-data, the average savings rate of the top five percent of households is more than 17 percent, whereas for the entire population it is just under 11 percent on average.

Therefore, a sharp increase in profit income typically goes to those sections of the population that save disproportionately more. The modeling and projection developed at DIW Berlin and presented here transfers the correlations observed in SOEP’s micro-data into the macroeconomic data of the system of national accounts, thus allowing household-related distribution information from SOEP to be used in DIW Berlin’s economic projection.

Specifically, a correlation between household incomes and their specific savings rates can be derived from the micro-data. The development of the aggregate savings rate can be determined on the basis of macro projec-

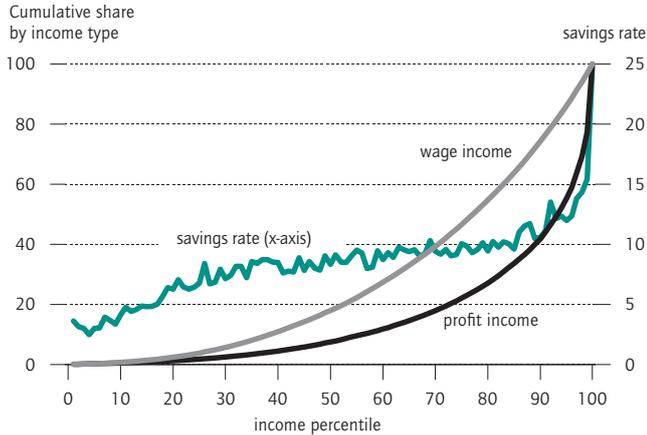
<sup>4</sup> See consumption projections, such as C. Dreger and K. Kholodilin, „Verbraucherumfragen für Konsumprognosen besser nutzen,“ Wochenbericht des DIW Berlin, no. 28(2011).

<sup>5</sup> See K. Brenke, „Einkommensumverteilung schwächt privaten Verbrauch,“ Wochenbericht des DIW Berlin, no. 8(2011); or E. Klär and J. Slacalek, „Entwicklung der Sparquote in Deutschland—Hindernis für die Erholung der Konsumnachfrage,“ Wochenbericht des DIW Berlin, no. 40(2006).

Figure 2

**Distribution of Wage and Profit Incomes and Savings Rates by Income Groups**

Average value<sup>1</sup> in percent



<sup>1</sup> Income from 1995 to 2010; savings ratio 2002-2009.

Source: SOEP v27, calculations by DIW Berlin.

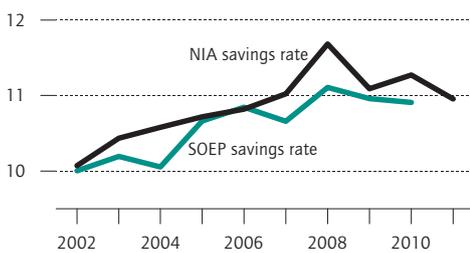
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Profit incomes benefit higher-earning and stronger-saving income groups more significantly than wage incomes.

Figure 3

**Savings Rates According to SOEP and NIA**

In percent



Sources: Federal Statistical Office; SOEP v27, calculations by DIW Berlin.

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The savings rates evolve in parallel, but in some years there are very significant differences.

tions for the various income types (such as net wages and salaries or self-employment and investment income) in the NIA. Thus, the use of micro-data helps to predict the savings rate in DIW Berlin’s macroeconomic projections consistent with the development of the various macroeconomic income types and can make an

important contribution to outlining the development of consumer demand.

**Modeling the Savings Rate with Micro-Data**

In linking the SOEP’s micro-data with the NIA’s macro-data, it is important to note that there are generally no equivalent figures in the SOEP’s household surveys for the variables defined in the NIA. Rather, a variety of SOEP variables are typically aggregated so they approximately match their counterparts in the NIA.

Sometimes, however, a complete match is not always possible. As a result, the savings rate derived from the SOEP’s micro-data does not always coincide with the savings rate resulting from the NIA (see Figure 3).<sup>6</sup> The reason for this is primarily that the SOEP survey explicitly asks for the amount that the respective household has “left over” for savings at the end of the month.<sup>7</sup> In addition to measurement inaccuracies in the responses, the question makes it impossible for the savings amounts in the SOEP to be negative. Dissaving, that is to say, spending from previously accumulated wealth which results in a lower average savings rate, is not accounted for in the SOEP, unlike in the NIA. Conversely, in the NIA, the repayment of loans is included as savings whereas the values specified by the SOEP do not take account of such transactions.

Given the sometimes significant differences between micro and macro level, a projection method based solely on micro-data is not sufficient: as there is no direct correlation between the micro- and macro-data, the gap must be bridged with a suitable procedure.

The method presented here is based on correlations observed at the micro-data level in the SOEP remaining relatively stable over time. Thus, for example, the distribution of the various income types over time remains essentially unchanged; the share of profit income, for instance, assembled by the top five percent of households has, in recent years, remained at between 45 and 50 percent. The shares and rates observed in the micro-data can thus simply be transferred to the macro-data and hence to the projection.

<sup>6</sup> See also U. Stein, „Zur Entwicklung der Sparquoten der privaten Haushalte—Eine Auswertung der Haushaltsdaten des SOEP,“ SOEPpapers, no. 249 (2009).

<sup>7</sup> The question was: „Do you usually have an amount of money left over at the end of the month that you can save for larger purchases, emergency expenses or to build up savings? If yes, how much?“

Box

**Income Distribution and Savings Rate: a Model Based on Micro-Data**

The model developed here establishes a correlation between the savings rate and the proportion of income of an income group. It illustrates that if an income group's share of the economy's total income increases, this leads to an increase in the savings rate for that income group. As a result, changes in income distribution can be used to estimate consistent changes in the savings rate.

The method is based on a model which relates a group's savings rate to its income share, where the latter is expressed in logarithmic terms. To reflect the extreme saving behavior observed in the data for the lowest and highest income groups, the first, second, and third power of the log-income share is used; thus the model captures the fact that in the lowest income percentiles, the savings rate is disproportionately low, while it is exceptionally high in the upper income percentiles (see Figure for an example of data from 2005).

The applied model (pooled regression) is outlined as follows:

$$s_t^i = c + \alpha_1 \log(y_t^i) + \alpha_2 (\log(y_t^i))^2 + \alpha_3 (\log(y_t^i))^3 + \epsilon_t^i,$$

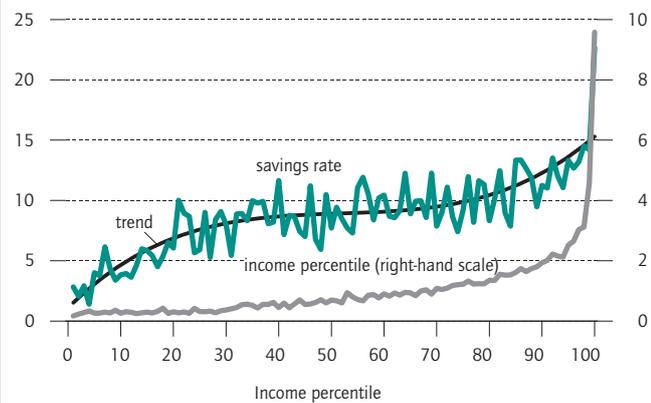
where  $t$  is the period (year),  $i$  is the income group,  $s$  is the savings rate, and  $y$  is the respective income group's share of overall economic income.

The fit of the model is adequate with an  $R^2$  of 0.76. The residuals show only a small bias for the groups, and in particular for time.

Figure

**Savings Rate and Income Distribution in 2005**

In percent



Source: SOEP v27, calculations by DIW Berlin.

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This intertemporal stability also solves the problem that the SOEP data are subject to a time delay due to their survey mode and are only available as annual data. As a result, the data differ from the quarterly NIA data in terms of frequency, and, in principle, arrive too late for typical forecasting purposes. But since the method presented here is only based on relatively stable correlations in the micro-data over time, distribution information contained in the SOEP can be extrapolated simply by averaging over the projection period and be applied at quarterly frequency.

To analyze decisions made about savings based on data from the SOEP,<sup>8</sup> the households surveyed are initially

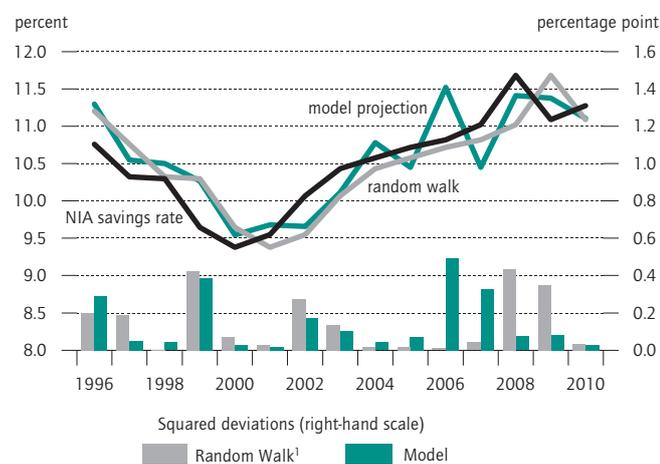
divided into 100 groups (percentiles) according to their total net income.<sup>9</sup> Time series for the average savings rate and the ratio of the respective group to total disposable income are calculated for each income group based on information given in the SOEP about household savings. Using these data, a model can be estimated which shows the (SOEP) savings rate as a function of relative income (see box). In addition, there is SOEP data available to determine a time series for the proportion of individually sampled income types (wage income, self-employment and investment income, transfer income) to total household income in each group. This information is needed for a correlation with the macro-data contained in the system of national accounts.

<sup>8</sup> Data was used from version 27 of the SOEP (doi:10.5684/soep.v27).

<sup>9</sup> Net household income from the previous year's SOEP survey is used here.

Figure 4

**Comparison of Different Estimates for the Savings Rate**



<sup>1</sup> The savings rate is consistent compared to the previous year.

Source: Federal Statistical Office; SOEP v27, calculations by DIW Berlin.

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The model reflects the progress of the savings rate much better than simply transferring the value from the previous year (random walk).

Based on rates derived from the SOEP, aggregate income figures from the NIA can be broken down into different income groups.<sup>10</sup> This method ensures that the various NIA income types observed at the macro level and specified as part of DIW Berlin’s projection—such as net wages and salaries (wage income) or operating surpluses, income from self-employment and investments (profit income)—benefit different income groups to varying degrees. As a result, profit income, as described above, contributes disproportionately more to higher incomes, while incomes in the lower- or middle-income bracket contain little profit income, but primarily consist of wage and transfer income.

By adding the various income components together, we obtain the total disposable income for each income group. This ensures a correlation is made between the development of projected (NIA) income types and the development of the income of the various income percentiles. The result is a distribution projection consistent with historical micro-data and the macroeconomic projection.

<sup>10</sup> The rates are sufficiently stable over time. An average value over the last five years is then used to continue the sequence until the end of the projection period.

Accumulated savings consistent with the distribution projection, in the context of the NIA, can then be determined with the aid of the estimated model for the income-based savings rate. Figure 4 compares the savings rate predicted by the model with actual values from the system of national accounts. The model projection dominates an uninformed random walk, that is, performs substantially better than assuming that the saving rate remains constant. In particular, the sharp increases in the savings rate between 2000 and 2006 are correctly modeled from the development of various income types. Accordingly, the squared deviations between the model estimates and the actual NIA values are, especially in this phase, significantly lower than for the random walk forecasts, which assumes that the saving rate remains at its previous level. The most obvious exceptions are the estimates for 2006 and 2007 which significantly deviate from the actual figures. The model draws on an exceptionally strong increase in investment income in 2006 and relatively weak development in 2007. The impact of this redistribution on the savings rate is obviously overestimated by the model. Nevertheless, the model is certainly suitable for correctly predicting changes in trends in the savings rate and can therefore make an important contribution to the accuracy and consistency of the projection.

**Recent Developments in the Savings Rate: Has There Been a Trend Reversal?**

In both this year and next, the disposable income of households is expected to increase significantly by 3.2 and 3.4 percent, respectively. This rise is more than one percentage point above the average in the pre-crisis years from 2001 to 2008.<sup>11</sup> Net wages are expected to increase at roughly the same rate as the overall average—unlike between 2001 and 2008, when they remained on average about 0.8 percentage points per year behind the increase in disposable income. In contrast, profit income increased rapidly during the same period. Between 2001 and 2008, it increased by one-third, whereas net wages and salaries rose by a total of only 7.5 percent; and this meager wage increase took place almost exclusively in the last two pre-crisis years 2007 and 2008, previously wages had largely stagnated (see Figure 5). In 2012 and 2013, profit income will increase more than wages, but the difference in growth between the two is not likely to be as significant as it was previously.

The recipients of wage income are now benefiting more than in the pre-crisis years from economic growth in

<sup>11</sup> See current projection by DIW Berlin: Fichtner, Junker, et al. (2012).

Germany. There is a greater proportion of income growth for a wider segment of the population: according to the SOEP, the lower 90 percent of households account for almost three-quarters of total wage income, while they do not have even close to half the profit income. Since the development of wages is no longer so far behind that of profit income, the income shift that has been continued for years in favor of the top ten percent (and particularly the top five percent) of households is expected to slow, if not come to a gradual standstill (see Figure 6).

The procedure outlined here confirms that, considering the projected development of the various income types, the savings rate is not expected to increase further. Certainly, the downward pressure on the savings rate resulting from the similar courses of wage and profit income is superimposed by other effects not part of the model presented here. Consequently, households' uncertainty caused by the crisis in the euro zone continues to lead to a somewhat increased accumulation of savings (precautionary saving). Accordingly, the latest projection by DIW Berlin assumes there will be no significant decline in the savings rate.

### Counterfactual Development of the Savings Rate

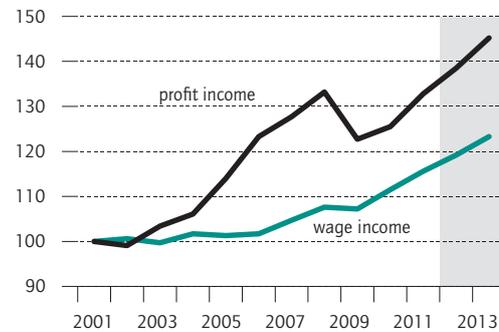
As outlined above, the observable income shift in favor of high earners in recent years—and an aggregate increase in the savings rate—has been largely driven by strong profit growth. The following section examines what the savings rate would have been if all income types had risen at the same rate as disposable income, that is, if there had not been an observed redistribution in favor of profit income in the last decade. Specifically, this means assuming less significant increases in profit income and higher growth rates in salary income.

The disproportionately high income among high-income earners is curbed significantly by the uniform development of income assumed in this scenario. Although a redistribution continues to take place, high earners achieve above-average increases in income even though these increases are evenly distributed across the income types. Hence, they record the highest growths in salary income and therefore still have a relative improvement in their income situation despite the more even developments across income types. Compared to reality, profit income in fact increases less significantly and wage income also increases more for the lower income peers, so that relative income growth at the top is less pronounced. Consequently, the savings propensity of high-income earners increases significantly less

Figure 5

### Wage and Profit Incomes

Index 2001=100



Source: Federal Statistical Office, calculations by DIW Berlin.

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In 2012 and 2013, wages increased almost as much as profit income. This was not the case before the crisis.

Figure 6

### Share of Total Income for the Lowest 95 Percent of Income Earners

In percent



Source: Federal Statistical Office; SOEP v27, calculations by DIW Berlin.

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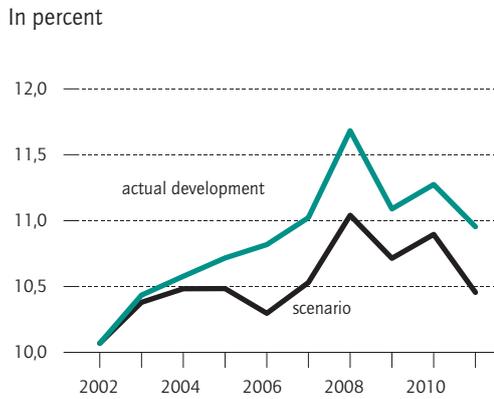
The shift in income at the expense of lower-income earners decreases significantly.

than has been observed in recent years. Moreover, the assumed development here benefits the lower and middle-income groups who tend to have a lower savings rate.

Both effects cause the savings rate in this scenario to increase significantly less. However, it is still increasing because high-income groups—due to the high proportion of profit income they receive—still participate dispro-

Figure 7

**The Savings Rate with an Actual and Uniform Development of Income Types**



Sources: Federal Statistical Office; SOEP v27, calculations by DIW Berlin.

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With a steady increase in wage and profit incomes, the rise in the actual savings rate is much lower than the rate observed.

portionately more and, in addition, there are more incentives to save because of changes in the law intended to promote private pensions. But with all income types developing uniformly, lower-income earners are no longer falling so far behind. The counterfactual aggregate savings rate shown in the following moves at a significantly lower level than the actual rate (see Figure 7). At its peak, the two rates differ by as much as 0.64 percentage points. This would have meant additional spending of up to ten billion euros each year, or about fifty billion euros in additional spending between 2002 and 2011.

**Conclusion**

This analysis has shown how macroeconomic forecasts can benefit from including microeconomic data. The use of personal or household-related distribution information, such as the micro-data contained in the German Socio-Economic Panel Study, may, for example, be useful in explaining the savings rate—and, indirectly, in explaining consumer demand as a core component of gross domestic product.

The micro-data used allow us to quantify the effects strong growth in profit income tends to have on the average savings rate due to the associated growth in income, particularly in the high-income group. This report presents a methodology developed by DIW Berlin

that enables this information to be transferred to the macro-data of the system of national accounts and, as a result, can ensure projections of increased consistency and accuracy.

Application of the method shows that the disparity of income distribution increased in the pre-crisis years and was actually coupled to a more pronounced propensity to save and thus weaker consumer demand, in contrast to a counterfactual situation where income had been distributed more evenly. Since wage income hardly increased before the crisis in 2008/2009, and profit income skyrocketed, it has been mainly recipients of the latter form of income that have benefited from economic growth. It is mainly the wealthiest households that save a large proportion of their income. A more even development of wage and profit incomes would have freed up additional spending of up to ten billion euros a year and formed a broader foundation for growth in Germany.

Over the next two years, strong wage growth is expected to benefit middle-income earners more markedly than in the pre-crisis years. As a result, this slows the current upward trend in savings behavior: the savings rate will probably remain at the same level as last year which, along with substantial growth in wages, will stimulate private spending.

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